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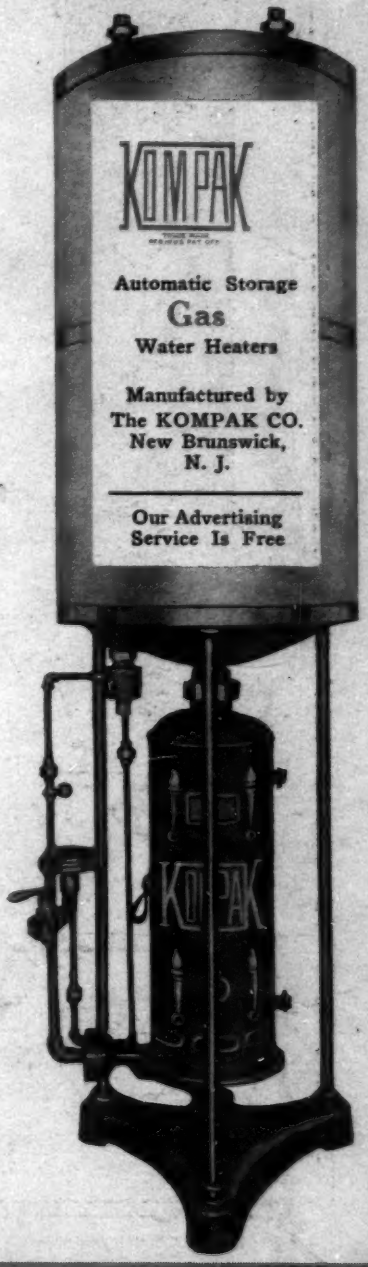

INDEX TO CONTENTS, PAGE 447

ADVERTISERS' INDEX, PAGE 20

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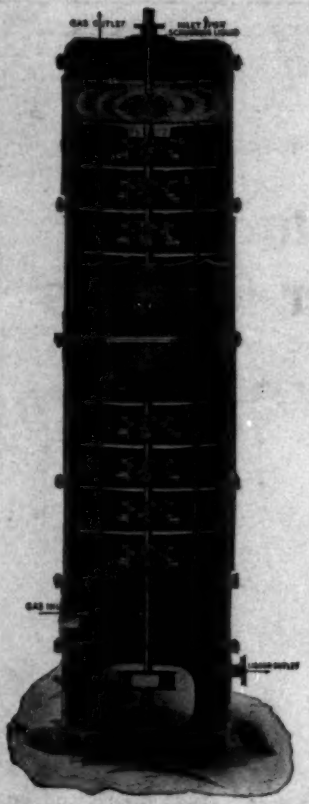

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The Use of Gas in Connection With Gilding on Common China and Other Substances

Glass Gilding a Growing Industry Worthy of Consideration — Frequent Use of Gas in Coloring Gold

By GILBERT C. SHADWELL

In view of the fact that gas now plays so prominent a part in the firing of porcelain, glass and china, a knowledge of the subject of gilding on china as well as other similar substances is of considerable importance to the gas man.

The gilding is done, as a rule, by two main methods, one being by an adhesive varnish and the other by means of heat or sometimes by a combination of the two. In the first case the varnish is prepared by dissolving in hot boiled linseed oil and an equal weight of either amber or copal. This is diluted with a proper quantity of oil of turpentine, so as to be applied as thin as possible to the parts to be gilded. It is then allowed to stand after varnishing for about twenty-four hours; after this it is heated in an oven up to about 130 deg. Fahr. (in fact, about enough to almost burn the fingers when handled). The heat softens the varnish, which is then ready to receive the gold leaf, which may be applied with a brush or pledget of cotton and the superfluous portion brushed off. They usually burnish when cold, interposing a piece of thin paper between the gold and the burnisher. Where "burning in" is practised the gold, reduced to powder, is mixed with powdered borax glass (anhydrous borax) moistened with a little gum water and applied with a camel-hair pencil. When quite dry the article is put into a high temperature oven and heated to about the temperature used for annealing. The gum then burns and the borax, by vitrifying, cements the gold with great firmness to the surface.

Gold Luster

We now come to the matter of what is usually called a gold luster for china painting. This process is a very beautiful one and the gas man visiting a factory where it is carried out cannot fail to be struck with its pleasing effects. The process is briefly as follows: They dissolve 1 dram of gold in ¾ oz. aqua-regia, or simply dissolve this weight of chloride of gold in water. They then add 6 grains of metallic tin and enough aqua-regia if required to dissolve it. They then pour, with constant stirring, into a mixture of ½ dram of balsam of sulphur and 20 grains of oil of turpentine. As it stiffens they add ½ dram of oil of turpentine and mix. More gold gives a brighter effect. Tin inclines it to a violet tinge. Balsam of sulphur is made by boiling together in a covered gas-fired cauldron furnace one part of flowers of sulphur and four parts of oil until the mass thickens. To dissolve gold for gilding which has to be fired they usually triturate in a mortar some gold leaf and honey until it is reduced very fine. Then they dissolve the honey with hot water and mix with a little gum water for use, or else dissolve gold in aqua-regia, evaporate to dryness over a lumen burner (in a porcelain dish), and then dissolve in ether for use.

Gilding Glass

Having described the china-gilding processes, we are naturally led to consider the gilding of glass. Moreover, in view of the fact that this is a growing industry it will be dealt with at some length.

There are several methods in vogue, some of which require heat, whereas others need none. Such a discussion as this, however, would be incomplete without brief mention being made of the cold processes, so that all will be included.

In the first case to be considered the process is roughly as follows: The glass is firstly cleaned very thoroughly. They then take some very weak isinglass size, which is heated up. While warm they frost the glass where they intend the gold to be laid with the size and a soft brush. Then they lay the gold on with a gilder's tip, previously drawing it very lightly over a grease pad to cause the gold to adhere to it. (The writer believes that some operators just pass it over their hair, as this seems to grease it sufficiently; and too much must not be

used, or it will be damaged.) They then tilt the glass aside to allow the superfluous size to run away, and then let it dry. If it does not look sufficiently solid upon the face they give another layer of gold the same way. Where the black lines are to show they take a piece of pointed wood cut to the width the lines are needed and with a straight-edge draw a line with the piece of wood, which if made true and smooth will take the gold off clean and so square and sharpen up all the edges, lines, etc. When this is done they give a coat of Brunswick black thinned with a little turps and the lines will show black and it will preserve the gold.

The real gilding is, however, effected by the aid of heat, as already mentioned, and the proper flux is anhydrous borax. For the purpose of carrying out the work this way a solution of gold in aqua-regia is precipitated by potash or green vitriol (iron sulphate), which gives a finely divided brown powder consisting of metallic gold. This is washed, dried and rubbed up with the anhydrous borax flux. This is then mixed with oil of turpentine or gum water and applied with a brush.

A muffle furnace or regular china kiln is then used, so that when heated in the muffle the volatile oil escapes and the gum is consumed. The borax then melts and firmly attaches the gold to the surface of the glass vessel or other piece.

An old method of operation used to be as follows, and as it is only slightly modified at this time it will be found to be interesting. The materials used were: Two grains of isinglass added to two parts of new rum and three parts of water. The usual modern substitute is alcohol, two parts; water, three parts, and sugar in small quantity. The water and isinglass are put in a clean container and simmered over a burner for about an hour. When the gas is turned out the alcohol is added and the whole is allowed to cool. The glass is then cleaned and the liquid is poured on; the gilding is done with a camel-hair tip and the glass is set on its edge. The liquid will then run from beneath the gold and in less than twenty minutes the plate is burnished. When dry it is rubbed lightly with fine cotton; if there are any spots not gilded they can now be gilded. The design can be drawn on paper and the lines perforated with a needle if to be used for size work or similar results. The paper is then put next to the gilded side, with the reading the wrong way. Then they dust through the holes with a rag and whiting, lift off the paper, and the design is found marked off. If the letters are wished clear black the operator can cut round the letters with yellow paint all over but the letters, wash off the gold with water, then paint all over black. If the letters are wanted to be in gold the letters are painted yellow and the surplus gold washed off; then paint all over black.

Even the Gas-Fired Water Still Enters

A Swiss method of gilding on glass is as follows: Pure chloride of gold is dissolved in water. The solution is filtered and diluted in 20 quarts of water, but 15 grains of gold are contained. It is then rendered alkaline by the addition of soda. In order to reduce the gold chloride, alcohol saturated with marsh gas and diluted with its own volume of water is used. The reaction which ensues results in the deposition of metallic gold and the neutralization of the hydrochloric acid by the soda.

In practice, to gild a plate of glass the object is first cleaned and placed above a second plate slightly larger, a space of about one-tenth of an inch separating the two. Into this space the alkaline solution is poured, the reducing agent being added immediately before use. After three or four hours' repose the gilding is solidly fixed, when the plate can be removed and washed. In all cases of cleaning the plate distilled water is used, and so a gas-fired water still can usually be sold to the customer.

Embossing and Gilding on Glass

While the actual embossing of glass in itself requires no use of gas, yet some of the steps in the process need this fuel, so that we should suitably include this end of the business at this juncture.

There are two ways of embossing glass in general use, although others are employed occasionally. The first is by means of the sand blast. The second method not being of interest to gas men, it will not be referred to in detail. In the hydrofluoric acid process, however, the glass is first coated with some protecting substance, and upon this the design is drawn with a sharp instrument so as to expose the glass below. The acid is then applied when the exposed portion of the glass becomes corroded. The wax or other protecting covering can now be removed. In practice the glass is warmed in a low temperature. It is then coated with molten beeswax (not paraffin wax, as that is too brittle). Superfluous wax must be drained off so as to leave as thin a coating as possible.

Or a coating may be used formed by making a composition consisting of two parts of beeswax, two parts asphalt. 1 ounce black pitch and 1 ounce of Burgundy pitch. They are heated together in a regular pitch kettle, or if desired a regular gas-fired cauldron furnace can be employed for the purpose. These are heated up until a drop placed upon a cool surface gets hard and tough. Whatever the protecting substance, now it should be permitted to set and the design should then be traced with some pointed instrument, care being taken to cut right down to the glass. If the design is complicated it will be found better to trace it first on paper and then to go over the lines with a pricker. Transfers are usually made when the work is to be done in larger quantities, and the whole is often done by machinery. If traced on paper, however, the paper can be placed upon the wax and some dark colored powder dusted over the holes. On removing the paper the outline of the design will be found marked on the surface of the wax. It is then easy to cut away the wax at the desired places.

A shallow tray of rubber must be taken and into it be placed about half an inch of the dilute hydrofluoric acid of commerce. The glass must then be placed, waxed side down, over the tray and left exposed to the vapor of the acid for some time. On removing it, washing with water and removing the wax by washing it off, the design will be found etched in opaque lines upon a bright ground. If required bright upon an opaque ground, the washed glass instead of being exposed to the vapor of the acid should be dipped in the acid itself. After re-

moval of the wax the surface of the glass is ground with very fine emery. Another way is to draw the design on the glass with a pencil and Brunswick black, using as a guide a sketch on paper placed beneath the glass. On exposure to the acid vapor the whole background is rendered opaque. The Brunswick black can be cleaned off with turpentine, leaving the design in clear glass. Instead of Brunswick black an ink may be used, made by dissolving asphalt in turpentine and thickening it with beeswax and resin. Where it is desired to produce an artistic effect by the introduction of shading, recourse may be had to what is known as Gruene's patent process, wherein the wax or Brunswick black is replaced by substances not altogether impervious to the action of the acid. The design is drawn with oil varnishes, greasy printing inks or some such substance (using a good protector for the high lights, a bad protector for the deep shades, and so on), and is then dusted over with finely powdered metal copal, etc. When dry the glass is dipped into hydrofluoric acid and allowed to remain in for a few seconds, and is afterward washed. If care is taken in the selection of the protecting materials it is possible for an artistic workman to obtain very striking results.

The gilding may be done either with bronze powder or gold leaf. If the powder is to be used the design is traced on the wrong side of the glass with japan gold size thinly laid on, which is afterward coated over with bronze powder. When dry a coat of varnish is laid on. In tracing the design it must not be forgotten that the wrong side of the glass is being worked and that when viewed from the front everything will appear twisted around, the right being to the left and the left to the right. To gild with leaf, the glass must be carefully cleaned and laid upon the design. Then a solution of isinglass is put on by the aid of a flat camel-hair brush. While still wet, gold leaf is laid on with a gilder's tip (for the sake of economy adhering to the design as nearly as possible). When quite dry the design, the outline of which has been pricked out (as before described), is taken and placed on the gold. Dark colored powder is then sprinkled on as before. The paper is next removed and the outline carefully gone over with Brunswick black. The superfluous gold is cleaned off by the aid of a sharp narrow chisel. The size is made by dissolving ¼ ounce of isinglass in a sufficiency of water by heating it, adding ¼ pint of rectified spirits and making up to half a pint with water.

Gilding Metals, Etc.

A method of gilding iron is to rub the surface of the iron with sodium amalgam, then apply a strong solution of chloride of gold; on heating it in a furnace the mercury will be driven off and the gold will remain, thus giving a fine gilded surface.

Gilding articles of steel is accomplished as follows: The articles of steel are heated until they acquire a bluish color, and iron or copper is heated to the same degree. The first coating of gold leaf is now applied, which must be gently pressed down with a burnisher and again exposed to gentle heat. The second leaf is then applied in the same way, followed by a third, and so on; or two leaves may be applied instead of one, but the last leaf should be burnished down while the article is cold. Gilding on granite is accomplished by applying a coat of size and fine powdered whiting. Let each coat dry and rub down with fine glass paper before the rest is applied. Then go over it thinly and evenly with gold size and apply the gold leaf.

The gilding of ivory is carried out in certain isolated trades and the work is usually done as follows: They put the ivory into a solution of sulphate of iron (copperas), and then into a solution of nitromuriate of gold. On withdrawing it, it is beautifully gilded. This, of course, is a modification of the simple gilding method referred to at the commencement of this article. It may be mentioned parenthetically at this point that gold-beater's skin is used to separate the leaves of gold used for gilding with gold leaf while under the hammer.

Gilding of Cotton

The gilding of cotton is common in certain fabrics and is done as follows: The cotton is spread with glue and dried. It is then coated with a thick solution of parchment size and dried again thoroughly. An oven is sometimes used for this purpose. When dry the gilding is applied.

Regarding powdered gold, which has been referred to in various sections of this article, this has various names—bronze, gold color, and Auri Pulvis. It is made as follows: Gold, one part; mercury, seven parts. An amalgam is formed and it is then heated over a burner until all the mercury is volatilized. As an alternative the mercury is sometimes dissolved out by means of nitric acid, which will not attack the gold unless hydrochloric acid is also present. In either case the residue is powdered, washed and then dried in a low temperature oven.

If the quantity operated on is considerable, the process is so conducted that the volatilized mercury is saved by being cooled and condensed into the solid form again.

Coloring of Gold

This operation consists of imparting a color to gold articles after every other process has been completed. Its object is to give to alloyed gold all the appearance of fine gold itself by dissolving out the base metal from the surface of the articles and leaving a facing of gold of a deep rich color. Two distinct modes of coloring are adopted by jewelers, termed, respectively, dry coloring and wet coloring. The latter is most frequently practised, as the former cannot well be applied to gold infertior to 18 karat.

Wet Coloring.—The ingredients of the mixture employed in this process have a powerful solvent action on the base metal with which gold is alloyed, a weaker action on the gold itself, so that the articles lose weight in direct ratio to the length of time they are submitted to the coloring process, and this loss is greater as the gold is lower in quality. Gee states that the coloring is hastened and the loss in weight reduced to a minimum by using old coloring liquid, and he assumed that the dissolved gold is to some extent deposited again on the article, because the loss in weight of some common qualities of gold was found to be very little and the amount of gold

recovered from the spent coloring liquid was very small indeed. This statement is in accord with the well-known fact that in any liquid in which a metal, say copper, is electro-positive to the metal in solution, say gold, the latter is deposited on the former. Many different mixtures are used for coloring gold. The following has been applied by an experienced Birmingham, England, jeweler, which he has found to be effective: Potassium nitrate, 12 ounces; common salt, 6 ounces; hydrochloric acid, 3 ounces.

The nitrate and salt are pounded to a fine powder and placed in a previously warmed plumbago crucible about 8 x 7 in., then stirred with a wooden spoon for a minute or two. The acid is then added with about 1 ounce of boiling water and the mass constantly stirred until it boils up to the top of the pot. The work, which has been previously cleansed in hot potash (in a small cauldron furnace, for instance) or soda solution, is then suspended in the coloring liquid by means of a silver or platinum wire for about one minute, then well rinsed in boiling water. A little more water is added to the color pot and when the liquid boils up again the work is once more immersed for another minute and rinsed in boiling water as before. This operation of dipping and rinsing is repeated several times, the coloring liquid being weakened by adding water before each immersion until the desired appearance is attained. The work is finally well washed in hot water and dried in basswood sawdust in a gas-heated sawdust dryer which may usually be water-jacketed for the sake of safety and to conform to the regulations of the board of fire underwriters. The whole process takes five to seven minutes. The colored work is next scratch-brushed on a lathe with a revolving brush made of very fine brass wire and often having some such liquids as stale beer dropping on it. If the coloring has been properly conducted, a beautiful rich and dead color will be produced.

Dry Coloring.—This term is applied to the coloring process when no liquids are used as constituents of the mixture. The ingredients used are: Potassium nitrate, 8 ounces; common salt, 4 ounces; alum, 3 ounces. These substances are ground to a fine powder well mixed and placed in a previously heated black lead color pot of the same dimensions as those described for use in wet coloring, but the same pot must not be employed for dry coloring as has been used for the wet process. It is well to get the pot nearly red-hot before placing the color in it. The mixture must then be constantly stirred with an iron rod. It will first boil up as a greenish liquid, then solidify, and afterward boil up again thoroughly mixed, having a brownish-yellow color. At this stage the work, which has been previously annealed and dipped in the color, being suspended on a silver or platinum wire (the latter being preferred), is kept in motion for about a minute and a half. Then it is immersed in boiling water (a cauldron furnace will do) containing a little aqua-fortis. The immersion and rinsing are again repeated, when the article possesses a beautiful color. It is then washed in hot water containing a little potash, and finally dried in a warm sawdust dryer. In dry coloring, the work should be as highly polished as possible previous to the coloring, for the brighter it is the better will be the final color. The time given above is only intended as a general guide, as some work will color much quicker than others and the time can only be arrived at by experience.

U. S. Bureau of Mines to Conduct Experiments in Carbonization of Lignite

Efforts to make the lignite or brown coals of Texas, North Dakota and other Western States so serviceable to that part of the country that it will be unnecessary in the future to ship in other coals at great expense are to be inaugurated immediately by the Bureau of Mines, Department of the Interior, at New Salem, N. D., in co-operation with a company there.

Immense quantities of these lignites, constituting one-third of the fuel resources of the nation, are available in these States but have been little used because of the great amount of moisture in them, their tendency to disintegrate when dry, and their liability to spontaneous combustion. In fact, the difficulties have been so great in burning the lignite that the people have preferred to buy their coal in Illinois, Indiana, West Virginia, Kentucky and Pennsylvania, bringing into their localities several million tons of coal that had been hauled an average of 1,000 miles and at a cost of nearly $5,000,000 in freights. The Bureau of Mines proposes to carbonize and briquet this raw lignite and develop a smokeless domestic fuel that will do away with the importation of domestic coal into this section of the country. By heating the lignite sufficiently to drive off the moisture and a part of the gases, a char is obtained which in heating value closely approximates anthracite coal. The briquetting of this makes a very satisfactory household fuel.

An appropriation of $100,000 was made by Congress a year ago for this purpose, and the Bureau of Mines has, after a careful survey of the entire field, in which a number of the cities in these States have offered their facilities, selected New Salem, N. D., as the place best fitted for the investigations, which will begin at once.

It is claimed, in this process of carbonizing the lignite and making briquets out of it, that not only is a superior domestic fuel created but that valuable by-products are made, such as enormous quantities of gas to be used for fuel or power purposes, and a great amount of oils and tars.

O. P. Hood, chief mechanical engineer of the Bureau of Mines, under whose auspices the investigations will be made, said: "It is believed that under present conditions a successful plant can be assembled. The Government fund will be used in providing those parts of the plant that are unusual and special, and in making a thorough investigation of the process and of the quantities produced so that a report for public use will be available for those desiring to enter this field."

The Government plant at New Salem will be under S. M. Darling, fuel engineer of the bureau, who has specialized on lignite problems for the Saskatchewan government.

No Field in Which Neglect of Simple Economics is More Prevalent Than in Field of Heat Insulation

I. Lundgaard Considers That More Is at Stake in Efficient Utilization than a Mere Technical Achievement—The Very Future of the Gas Industry Hangs in the Balance

Rapid progress is being made in the better utilization of gas fuels. Development of more efficient appliances has followed closely the better understanding of the nature of the problems involved and various factors through which greater conservation may be accomplished, declared I. Lundgaard in a paper at the annual meeting of the Natural Gas Association of America. Gas is recognized as the most perfect fuel and as such as being capable of utilization at the highest efficiency. It must be admitted at the same time that no fuel can be more easily wasted. It would be impossible in a few minutes to more than barely outline the elementary principles underlying efficient use of gas and I realize that the following brief resume of knowledge upon this subject can only be useful to you as an indication of lines of further study and I urge that you as individuals and in association give the whole matter serious consideration. There is more than a technical achievement at stake. The welfare of the gas business is and will be in a large measure proportional to our knowledge and application of correct principles in the utilization of gas.

Insulation

The first and most obvious step to take for conservation of gas is to heat insulate the space being heated. If an oven is constructed with little or no insulation, the heat loss through its walls is great and the expense for gas is large, but the oven itself is inexpensive. If heat insulation is added, the heat loss is decreased while the expense of construction is increased. It can be mathematically proven that the maximum economy obtains when the cost of the heat loss for a given period of time is equal to the fixed charges of the additional expenditure for heat insulation for the same period of time. For given conditions of price of gas and heat insulating materials, the working temperature and the load factor of the oven, the amount of heat insulation required for maximum economy can therefore be readily determined. There is perhaps no field in which neglect of simple economics is more prevalent than in the field of heat insulation as evidenced by an inspection of appliances offered by manufacturers.

Correct Combustion

When gas is burned, an amount of air just sufficient for complete oxidation of the gas should be admitted to the flame. If less air is admitted, the combustion is incomplete; if more air is supplied, part of the heat of combustion is consumed in heating the excess air, and in either case gas is wasted. The amount of heat available for work in any furnace is the amount of sensible heat contained in the products of combustion at the temperature at which combustion takes place and the temperature at which the flue gas leaves the furnace minus the heat leakage of the furnace itself. The effect of excess air is twofold; it not only decreases the temperature of combustion but it increases the temperature of the exhaust gases and therefore doubly decreases the margin of available heat in the products of combustion. This is well established theory and practical tests have proved that the loss due to prevailing faulty combustion is appalling. No subject can be more worthy of your consideration than this if you desire to conserve gas.

The remedy lies in improved design of mixers when atmospheric burners are used, and in the employment of automatic combustion control where blast burners are used. The most complete source of information in regard to combustion of gas is found in the 1919 Report of the Committee of the American Gas Association on Proportional Mixing and in the Report of the Committee on Atmospheric Burners.

Recuperation

A most encouraging sign of the times is the wide interest manifested in the recuperation of the heat contained in furnace exhaust gases. Recuperation in various forms has been in use for large furnaces for years and is now being frequently applied to even quite small furnaces. The possible saving is greater for the higher working temperatures, but it is amply demonstrated that recuperation pays well at working temperatures as low as 1,000 deg. Fahr.

In order to recover waste heat from the flue gases, it is necessary to provide some means of transferring their heat to the air supplied for combustion. The simplest form of a recuperator is a pipe coil installed in the exhaust flue, the air for combustion being carried through the coil and heated by absorbing heat from the flue gases. The heat thus added to the air before it reaches the flames raises the temperature of the gas flame and therefore increases margin of heat available for work in the furnace. Saving in gas consumption of 50 per cent and more is readily possible for high temperature processes.

Another way of recovering heat from the exhaust gases is that of building the furnace in accordance with the principle of counter-current heating. Here the material to be heated moves in the opposite direction of the furnace gases so that cold material entering the furnace first absorbs heat from the relatively cold flue gas and as it passes forward either by stages or by continuous conveyor movement constantly gets in contact with the higher temperature of furnace gases until

it reaches the point of final temperature and is removed from all furnace.

Other Design Factors

Inasmuch as the heat loss of any given type of gas appliance is a function of the size of the exposed surface and hence of the size of the heated space, it follows that the appliance should be well adapted to the work to be done as to its size. The ratio of the space available for work in an appliance to the total space subject to heat is termed the space factor of the appliance. A careful designer will keep the space factor at the highest possible point and the careful sales engineer will advise the use of the smallest appliance that adequately meets the requirements of the consumer's work.

The radiant form of heat is most readily absorbed by the material to be heated so that wherever possible the appliance should be so designed that heating is accomplished by radiation to the greatest extent possible.

Intimate knowledge of materials suitable for construction of heating devices is important so that in all cases the material most suited for the purpose is selected and the amount of heat-absorbing material is limited to that required for strength and durability. Excess material involves heat loss and construction expense.

The use of the proper form of burners and furnace assessories is another fertile field for study and research and is recommended to your attention.

Performance Standards

The establishment of methods of accurately determining the relative merits of different makes and kinds of gas-consuming devices is a matter of the utmost importance. The American Gas Association is now attempting to formulate such standards and the co-operation of the Natural Gas Association of America in this work would be greatly appreciated. The Bureau of Mines is at present engaged in a series of tests of cooking and baking appliances and is co-operating with the American Gas Association Committee as to the best methods of conducting tests. It is confidently expected that when the efficiency of gas appliances is made a matter of scientific determination that competitive conditions will force manufacturers to pay increasing attention to excellence of design and construction details. The "price and beauty" contest now going on is not a worthy spectacle to behold.

Conclusion

In closing I wish to leave these thoughts with you. The subject of utilization efficiency of gas is not one that you can expect a layman to do full justice to—it is beyond him. The great mass of consumers needs your advice and guidance as much as they need your product. Your activities in the "field" cannot be gauged as to their success by inspection of the profit and loss column of the new business department. The result of this department's work in terms of public good-will is the real measure of its success, and the prosperity and welfare of any public utility rests on this.

In making your decision as to whether or not you are to go into the appliance business, take a broad view of the whole situation.

In Preparing Tax Report of Natural Gas Wells, Valuation Most Difficult Point to Ascertain

Roswell H. Johnson Describes Methods of Appraisal as Based on Fair Exchange Value

In preparing the tax report of a natural gas company for 1919, one should start with Form O of the Treasury Department, declared Roswell H. Johnson, Pittsburgh, Pa., in a paper on "Federal Taxation of Gas Wells" read at the recent Natural Gas Association convention. The first schedules to be filled out are I, IV, VI and VII. The remaining schedules are dependent upon these. Schedule I calls for cost of property as of date of acquisition. The blanks must be filled out separately for each producing lease, and it offers little difficulty except that some of the data may not be obtainable. In some of such cases the bonus may have been only nominal, so that little harm is suffered under those circumstances. Where the bonus was nominal and other expenses were charged as such, and one knows that the capital to be ascertained while obtainable would not justify the search, one is justified in writing across a number of these entries "Cost only nominal and not claimed."

Schedules IV, VI and VII offer little difficulty and lead up to the very difficult Schedule II. This is the valuation schedule and is made out for properties as of March 1, 1913, the beginning of the income tax law. The most obvious way to ascertain "fair exchange value" would be to cite sales of similar properties. Where such sales are of truly similar properties and between a willing buyer and willing seller at the same date, it is the exact index of "fair exchange value." Such sales are almost always non-existent, so it becomes a question of how dissimilar the property may be to permit still the analogy to be drawn. The sale must have taken place at very nearly the same time, because the prospect of future price changes is constantly changing and, hence, the tone of the market. Lastly, there must be the condition of a willing buyer and a willing seller, a condition which by no means always pertains in the gas business, since there is generally a restriction on the freedom of exchange between a company or individual without pipe line and one with a pipe line and selling to consumers. Only two gas pools furnish sales of usable sort, so far as known to us, so that probably very many of the gas properties must be appraised analytically. These pools, McKeesport and Elk City, are each unique and not comparable to other pools.

The method recommended is to establish first a predicted price curve for what may reasonably have been expected to be the probable future prices at the time of appraisal. This is best obtained by taking a curve of past prices, and then continuing it into the future on the same average percentage of advance. This gives a curve that is too conservative but safe, since it never reaches even the present price of artificial gas in the life of a well. This extrapolation is most conveniently done by drawing a straight line on semi-logarithmic paper, which automatically gives a regular

(*Continued on page* 445.)

Even if All Country's Coal Were Carbonized in By-Product Recovery Ovens Amount of Benzol and Its Homologues Recoverable Would Supply Only Small Percentage of Motor Fuel Used

Gas Oil Committee of American Gas Association Outlines Oil Situation Clearly and Completely—Prospect of Immediate Relief and Outlook for Future

The Gas Oil Committee of the American Gas Association, according to its statement prepared for the emergency meeting in New York City, May 26, had determined, with a considerable degree of accuracy, the quantities of carburetted water gas and oil gas made in the years 1918 and 1919, and has estimated the quantities that will be produced in 1920, together with the quantity of gas oil used and required for these same periods.

It is to be noted that as concerning the immediate situation, roughly 5,000,000 barrels per year are required for gas plants in the Mississippi Valley, and 14,400,000 barrels are required for gas plants on the Eastern Coast.

The reasons why the quantity of gas oil used has not increased in greater proportion are partly the decreased amount of oil used per thousand feet of gas produced by some gas companies, and, partly the increased production of coke oven gas and coal gas.

Production

Stimulated by the greatly increased price of crude oil, the drilling of new wells has increased considerably, and the production as reported by the Geological Survey, if it continues at the present rate, will probably exceed 410,000,000 barrels in 1920. The production for Mexico is also increasing, and if the imports continue during the balance of the year at the present rate, this country will probably receive 20,000,000 barrels from that source.

Consumption

The consumption of oil at the present time would indicate a demand of approximately 430,000,000 barrels for the year 1920, and with increasing exports this means that this country undoubtedly will have to draw heavily upon its reserve stocks.

Refining

The production of gas and fuel oil is increasing, although there has been apparently a slight decrease in the percentage of production of these fractions in 1919 from 1918.

Due to the manner in which the statistics are reported, it is difficult to determine the exact percentage of the total volume of gas and fuel oil that is distillate gas oil. It is estimated, however, that of the 181,000,000 barrels of gas and fuel oil produced in 1919, about 30,000,000 barrels is distillate gas oil.

Gas and Fuel Oil Available to Industries

There was available to the industries in the United States, other than the Navy, Merchant Marine and Railroads, in 1918, about 110,000,000 barrels of gas and fuel oil; in 1919 about 100,000,000 barrels, and in 1920 there will probably not be available over 90,000,000 barrels. This apparent reduction in the amount of gas and fuel oil available is due to a number of factors, which may be summarized as follows:

There is an increasing tendency to cut away a lighter portion of what was formerly known as the gas oil fraction to replace the lighter portion, or kerosene fraction, now going into gasoline; and to cut away the heavier portion of what was formerly known as gas oil to go into lubricating stock. This has reduced the actual production of the distillate we formerly knew as gas oil.

An increasing proportion of the crude oil is being refined into gasoline, kerosene and lubricants, so that a smaller proportion is simply topped, producing gasoline, kerosene and fuel oil.

In addition, there has been a considerable increase in the installation in refineries of what are known as cracking plants, which take this remaining gas oil and, by suitable heat treatment, break it up into gasoline and tar. Your committee is definitely of the opinion that the tar or residue from the cracking process is entirely unsuitable for use in carburetting water gas.

There is a very large increase in the requirements of fuel oil for the Navy, the Merchant Marine and many industrial plants.

There is an increase in the requirements of fuel oil for the railroads in the Southwest.

Of the ninety odd million barrels of gas and fuel oil available to industries, probably not over 30,000,000 barrels of this will be a distillate oil, and while this apparently is in excess of the requirements of the gas companies, yet they are not the only industries which at present are competing for this grade of material.

Our investigation indicates that it is in demand by glassmakers, manufacturers of enameled iron ware, manufacturers of certain kinds of pottery, and in brass melting, and that under existing circumstances, these other industries are apparently able to pay higher prices for this product than the gas companies can afford to pay.

In addition to these demands, at the present time it is apparent that the market is slightly over-sold on fuel oil, and that many oil companies have been compelled to deliver distillate gas oil, kerosene, and

even crude lubricating oils as fuel oil in order to fulfill their existing contracts. At the expiration of these contracts these materials will again become available for the normal uses.

Again, the demand for fuel oil by the manufacturers of iron, steel and other metallurgical processes which were brought into existence during the war will, in many cases, be eliminated, as producer gas, or blue gas, in spite of its higher installation cost, is more economical than fuel oil at its present increased price.

Important Factors

Important factors in the production and demand of oils suitable for gas-making purposes, which influence greatly the supply of this product to the gas companies, are the geographic location of the producing stations, and the ownership and control of these stations. These form important economic reasons why the oil is not available to those companies that are in the greatest need. The greatest quantity is available in the Middle West, while the greatest demand is in the Far East. Transportation problems are the greatest economic obstacles. It is practically impossible to move this oil East in tank cars, and the pipe lines cannot handle it. Also, in the Middle West the oil is owned and controlled by many small refineries, no one of which could supply more than a small fraction of the requirements of the Eastern gas companies. For this reason, the statistics showing the total quantities of oils available for the entire country are misleading as a whole, and can probably be considered only when classified by districts, as we have endeavored to do in this report.

It appears that while there may exist a sufficient quantity of the distillate grade of gas oil to supply the industry, yet the competition for this fraction by other industries at the present time is so great that it seems probable that the gas industry will not be able to purchase a distillate oil for anything approaching the former figures.

Future Supply

The question, then, is to determine whether there is not a substitute for the distillate gas oil. Two materials suggest themselves—reduced or topped crudes, and crude Mexican oil.

The greatest production of reduced or topped crudes comes from the Mid-Continent and Gulf Coast fields, where, in 1919, probably half of the crude was treated in this manner.

There is evidently a sufficient quantity of topped crude from the Mid-Continent field to supply plants in the Mississippi Valley, and there is no apparent difficulty in transportation, but these topped crudes would not be available for the gas plants on the Atlantic Coast, on account of the excessive transportation costs.

Topped crudes from the Gulf Coast fields, in 1919, amounted to about 45,000,000 barrels, but large quantities of this oil were used by the railroads, and by industrial and power plants in Texas and the Southwest, where the coal supply is so deficient. If this oil were released from that demand, there would be sufficient for the requirements of the Atlantic Coast, provided there were sufficient pipe lines to the Gulf Coast, and sufficient tank steamers to transport it.

Your Committee has not been able definitely to ascertain the qualities of all of the topped crudes from the districts mentioned. What information it has, however, is to the effect that up to the present time, practically all of the topped crudes from the Mid-Continent field are sufficiently low in coke to be utilized for carburetting purposes, without serious loss in efficiency or capacity of gas-making apparatus. The information regarding the topped Gulf crudes is not so clear, but it would appear probable that at least half of the topped crudes thus produced would be suitable for gas-making purposes.

Operating Difficulties

From information gathered by your Committee, it appears that many of the gas plants will probably have to use these reduced crudes during the coming year. It has already been determined that they are not as readily handled as the distillate gas oils that have been used in the past.

Nearly all of these topped oils carry from 2 per cent to 6 per cent of coke, so that more frequent cleaning of carburetter checker brick must be anticipated, with a resulting reduction in capacity due to stopping up of the machines and to time required for recheckering.

It has been found, also, that many of these oils can be handled successfully only through a very narrow range of operating conditions and temperatures, requiring that most expert and constant attention. When the carburetting temperatures are too low, or the fixing time too short, there results a viscous emulsion of tar and water in the washbox and tar separators, which appear to be quite impossible to handle by the ordinary means.

This emulsion may continue up to 60 per cent of water. On the other hand, if the fixing temperatures are too high, lampblack, stopped take-off pipes, excessive production of naphthalene and a very viscous tar containing a high percentage of free carbon result. In other words, the successful utilization of many of these oils requires for greater skill in operation and much closer supervision and demands greater accuracy in the use of temperature control than has been required with the distillate oils used in the past. Your Committee believes that the requirements are so severe that many of the small plants will probably find it difficult, if not impossible, with their usual forces, to successfully handle these oils at the periods of maximum consumption.

A further difficulty is the fact that many of these reduced or topped crudes become so viscous at winter temperatures that they cannot be handled in the ordinary sized oil lines and successful operation will require the installation of heating coils in storage tanks, larger suction lines and means for keeping the oil warm from the tanks to the machines.

Mexican Oils

With regard to the Mexican crude oils, it appears likely that the change in regime in Mexico, drilling conditions may become easier, and that there will be a considerable amount of what is known as light Mex-

ican crude available on the eastern coast This oil is quite high in coke, carrying from 12 per cent to 14 per cent, and it will run from 3 per cent to 4 per cent sulphur, so that while it may be possible, by some modifications in apparatus and in operation, to utilize such material, experimentation has shown that it will be at a sacrifice of considerable capacity and efficiency; and, in addition, the gas so produced will probably contain fixed sulphur compounds in excess of 30 grains per 100 cu. ft., which would render it unsuitable for domestic distribution, unless some practical process is developed for the removal of these fixed sulphur compounds. From what we now know, after months of experimentation, it seems improbable that such a purification process can be developed and installed in sufficient time to make these Mexican crude oils available within the next year or two.

Your Commtitee understands that several large refineries are to be built on the Atlantic Coast for the purpose of refining the lighter grades of the Mexican crude oil. If this is done, there may be a small amount of distillate gas oil available that will be sufficiently low in sulphur to permit its use for gas-making purposes. However, we can probably look for no relief from this source for a year, at least.

Prices

The present prices for distillate gas oils are probably the result of the law of supply and demand. The demands of the automotive industry for light distillates and lubricating oils have grown to a point where the former gas oil fraction has been so reduced that there is not a sufficient quantity to supply the demands of the various industries utilizing it; and, furthermore, with the increasing introduction of the cracking process for manufactured gasoline, which uses this distillate gas oil fraction as its raw material, the cost of the fraction must inevitably bear some close relation to the selling price of gasoline.

Gas-making oils that for twenty or more years have been procurable at prices ranging from 2½ to 5 cents per gallon, are procurable now only at prices ranging from 10 to 15 cents and even then in only limited quantities.

With regard to the prices for reduced crudes, these are useful otherwise only as fuel oils, and here the price must come into direct competition with coal—at least for the fuel oils produced and available east of the Rocky Mountains, and north of Texas, where coal is scarcest and highest priced. The present price is due apparently, to a number of very complicated factors, the bulk of which are the result of the present chaotic conditions of the country's transportation facilities.

Economic Situation

Putting aside a few of the specialized industries which can from the nature of their product, afford to pay excessive prices for fuel, it would seem that the gas industry and the automotive industry are the two most important industries competing for hydrocarbons on the Eastern Coast, and it appears that we have arrived at a point where the normal supply of gasifying oil is insufficient, and where one or the other of these two industries must change the nature of its demand.

It is understood that the large automobile manufacturers are making every effort to increase efficiency in their motors, but much of this is nullified by the American desire to take everything on "high," in distinction to the European principle of using smaller motors and making more frequent use of gears.

The question of the substitution of alcohol and benzol for any considerable portion of the motor fuel is rather hopeless at the present time. The yield of alcohol obtainable per acre, from farms that are already overtaxed in producing necessary crops, is too low to fill the demand, especially with the present labor situation.

The amount of benzol and its homologues recoverable, even if all of the coal were carbonized in by-product recovery ovens, would supply only a very small percentage of the total motor fuel used.

It appears true that the public is entirely ignorant of the present state of affairs in the oil situation, and it is also true that a very large proportion of the gasoline sold to-day is inefficiently utilized, if not absolutely wasted. It is, therefore, important that the public should be educated to the fact that greater efficiency must be obtained in the operation of its motor cars, and that waste and undue pleasure riding must be eliminated; otherwise, it will have to pay greatly increased prices for, or else do without the household necessity—city gas. The Gas Oil Committee consists of D. D. Barnum, R. B. Brown, L. R. Dutton and J. B. Klumpp.

In Preparing Tax Report of Natural Gas Wells, Valuation Most Difficult Point to Ascertain

(*Continued from page* 442.)

percentage advance in successive years. One should also calculate in the same way the advance in maintenance costs.

The next task is to get the yield which the well will produce in the successive years. Where the wells are metered, as at McKeesport, this is a less difficult task, but in other instances yield cannot be had directly and the capacity must be obtained at the successive intervals by calculating from the minute pressures which have been read. Minute pressures taken by merely closing the gate into the line at that line pressure give a figure quite different from the open flow capacity obtained by the minute pressure formula if taken after blowing. The open flow capacity obtained is best reduced to yield values by the use of the ratios given by Weymouth.

The greatest difficulty in working out a gas capacity decline curve lies in the fact that a number of the wells are pulled on so much less, either because their well pressure is opposed to a relatively high line pressure or else because they are held as reserve so that they cannot be used in working out the decline curve of a typical well. After the expected profits are determined each year by this method, each one is multiplied by a compound discount factor for its year. None of the published "present worth" or compound discount tables are available, as they all start with a full year and assume that the money is not realized till the end of the year.

The composite curve can be constructed following the method of Beal's family curve. This can be done by his graphic method for which the term "shingling" is proposed, or by calculation from the corresponding parts of many well declines as described in the Manual of the Oil and Gas Industry for which the term "segmental" is proposed.

Form O calls for the valuation and classification of every single *producing* lease. Having appraised the well and its supporting acreage, the remaining acreage in the lease is to classify into zones, each having a different probability of becoming productive. The value of the productive acreage as acreage multiplied by this probability and less deduction for reduction of pressure because of deferment of drilling and risk, as conditions may warrant, give us a value for this remaining portion of the lease.

Our next step is to calculate the value of the physical properties as of the date of appraisal. If installed prior to 1913 its original cost must be depreciated to a 1913 basis. The rate of deprecation of the well equipment should be as nearly as possible on a straight line for the estimated life of the well.

The fair exchange value of the whole property must now have deducted from it the value of the physical property as of the date of appraisal. This value of physical property constitutes the depreciable capital sum after subtracting a percentage equivalent to the present value of eventual salvage. The fair exchange value less the cost of the physical property is the depletable capital sum and represents value attributed solely to the gas in the ground. It in turn, however, should be divided into three parts, one representing the cost of the gas reserve, one that of drilling and exploration, earnings on both of which are merely a return of capital, and the remaining portion of the value the earnings from which are on an appreciation shown by the appraisal over cost, so that such earnings can be transferred to surplus and increase the invested capital, provided they are not distributed as dividends.

The rate of depletion is based in the regulations upon the rate of decline in rock pressure. This method was chosen as against yield or capacity because it was known that in the case of many small operators yield or even capacity figures could not be had by lease units and the regulations demand separate computation by lease units. It is expressly stated, however, that depletion need not necessarily be worked on a rock pressure basis if there can be shown good reasons why any other method would give a better result. There are two circumstances when rock pressure decline is not adequate. The first is where water has been encroaching. The second circumstance is where a pool has been pulled upon rapidly one year, and the next year, for some reason, such as a new gas pool coming in elsewhere or because of a particularly mild season or desire to use it in part as reserve, it is pulled upon less rapidly.

The construction of the curve for ascertaining the rate of depletion is essentially like that of curves for appraisal, except that in appraisal the curves must be one of yield and the valuation is set up once for all, and no information subsequent to the date of appraisal can be utilized; whereas, in making out the depletion rate rock pressure, yield or other index may be used. All the data is utilizable and revision from year to year is permissible, and indeed desired, in the regulations.

While the depreciable capital sum in so far as represented by wells and well equipment should be depreciated on a straight line representing the life of the well, this does not apply to other features, such as pipe lines, marketing facilities, etc., which receive a straight line depreciation set upon what experience has shown to be their probable life, which frequently exceeds the life of the wells. We may add each year the money invested in new physical property and also the money spent in new development work, one going into the depreciable capital sum and the other into the depletable capital sum. Cost should always be entered unless the well is such as to permit the use of ascertained value under the regulations.

The conditions which give the discovery appraisal right are as follows: First, the well must have a value which is disproportionate to the cost. Further, the acres of the reservoir appraised must have been purchased or leased prior to its having become a proven area, and it must not have previously received a discovery appraisal.

In appraising a discovery well one is, of course, limited to the knowledge as of that date. This involves the use of a different predicted price curve as of that date, rather than that one would have used March 1, 1913. The law permits the appraisal to be of the date of discovery, or thirty days thereafter.

If an area is proven for oil, the discovery of the first commercial gas well which is commercial as to its gas alone in this area will give a discovery appraisal for gas if the other conditions are fulfilled.

In summary, gas companies must realize the great amount of labor in merely hunting up the data to fill in Form O and its supporting blanks for each producing lease, entirely aside from the technical matters of establishing proper valuation, recognizing which wells have the discovery right, properly valuating these discoveries and working out the rate of depletion.

The task commands vastly more attention than has heretofore been given to taxation. It should be prepared for throughout the year and should alter methods of management and accounting to make possible the preparation of the return and report with least expense and least chance of having it returned by the department as inadequate.

PUBLICATIONS

A new publication called the "Elliott Era" has just made its appearance—the sub-head being "How to Make Life More Pleasant for the Women in the Kitchen." It is published in the interest of the Elliott Water Heater Company, Brooklyn, N. Y., and contains many snappy paragraphs as well as several articles dealing with the progress of the problems of the kitchen from the early days up to the present time. Editorial announcement states, "To the women of America, we dedicate this little magazine. Its aim will be to take some of the drudgery from daily routine tasks, particularly the work of the kitchen. Labor saving devices and appliances designed to eliminate work and worry will be given preference." The publishers are the Jay T. Dee Company, 9 Willoughby St., Brooklyn, N. Y.

American
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SIXTY-FIRST YEAR

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Contents of This Issue

THE USE OF GAS IN CONNECTION WITH GILDING ON COMMON CHINA AND OTHER SUBSTANCES 437

NO FIELD IN WHICH NEGLECT OF SIMPLE ECONOMICS IS MORE PREVALENT THAN IN FIELD OF HEAT INSULATION 441

IN PREPARING TAX REPORT OF NATURAL GAS WELLS, VALUATION MOST DIFFICULT POINT TO ASCERTAIN 442

EVEN IF ALL COUNTRY'S COAL WERE CARBONIZED IN BY-PRODUCT RECOVERY OVENS, AMOUNT OF BENZOL AND ITS HOMOLOGUES RECOVERABLE WOULD SUPPLY ONLY SMALL PERCENTAGE OF MOTOR FUEL USED 443

EDITORIALS 447

MERCHANDISING GAS 449

NEWS OF THE GAS INDUSTRY 451

PERSONAL NOTES 455

As the Journal Views It

But It Would Afford a Very Appreciable Relief in the Situation

Some gas men, doubtless, on the principle that if we cannot have the whole apple why strive for any part of it, will be discouraged by the flat statement of the American Gas Association's oil committee that even if all the coal were carbonized in by-product recovery ovens the benzol produced would supply but a small proportion of the demand for motor fuel.

Other gas men will not have learned anything they did not know already.

No sensible gas man ever imagined that with the advent of benzol on the motor fuel market gasoline would be tossed into the discard as an obsolete fuel.

So long as gasoline is to be had there will be ample demand for all that can be produced. It is a natural resource, a failure to utilize which would be just as wasteful as blowing into the atmosphere natural gas so the oil in the well could be gotten at quicker.

Just at present gasoline producers seem to be unable to produce enough to meet a tremendously augmenting demand.

Meantime is the country's progress to gait itself to the gasoline producers' potentialities in production?

Is the project to save an almost hopeless transportation situation by augmenting the railroads with motor trucks, for instance, to be held in abeyance so we may keep within the productive limits of the gasoline producers?

Gas company benzol production cannot hope to

take the gasoline producers' motor fuel business away from them.

But it can help gas companies to overcome the handicap of the inelastic rate systems they are now working under.

It may even indirectly help gas companies in their own gas oil shortage situation.

It can aid in the conservation of another natural resource just as precious nationally as well oil.

It can help appreciably in the motor fuel problem, supplying as it will an augmented supply of a superior fuel in no inconsiderable quantities.

And it would provide a moderating influence on motor fuel prices.

Benzol production by gas companies, as a by-product, might well be made to them a profitable undertaking. It would without question be an undertaking beneficial in a large sense to the welfare of the country.

Conservative? Yes; but Not Always in Their Own Behalf

In his own mind the average gas man is convinced that a low B.t.u. gas in ordinary household usage is just as good as a high B.t.u. gas; that in discharging its functions no greater volume of the lower is required than of the higher. And there is no question whatever as to its being a cheaper gas to produce.

Individual tests here and there have apparently demonstrated the truth of the average gas man's conviction that the extra expense involved in raising the calorific value of a gas higher than 450 B.t.u. is sheer waste.

Despite the fact that the privilege of producing a gas of rational standard would assist materially in solving his present financial problem without raising rates per thousand cubic feet; despite the fact that we have testimony to the effect that lower B.t.u. gas supplied on a broad scale in actual urban service has not increased consumption, when put to the test of condemning as wasteful manufacture gas above a definite B.t.u. standard the gas man hesitated and evaded.

The gas industry, nationally speaking, is conservative. Though individually each gas man might believe that a 450 B.t.u. gas foot for foot does just as much work for the domestic consumer as a 550 or higher B.t.u. gas, though all signs and even actual trial may seem to bear out this belief, though the adoption of this lower standard is sure to react to the economic benefit of the gas industry, the gas industry as a group hesitates to officially condemn the high standard specifically.

The gas man has stepped conservatively throughout his industry's history. Too much is involved to permit any more hasty course.

When he has studied this thermal standard question exhaustively; when by painstaking test and research he has convinced himself that the low standard gas is all that it seems to be, he will come out definitely and broadly with official recommendation on how high we should go in B.t.u. content. Until then he will step lightly. This even though the only possible loser by premature action might be the consumer.

The gas man's conservatism is not onesided. It not only looks to guard his own interests but those of his customer as well. On this basis, even though far-fetched sometimes, his conservatism is commendable—for it is fair.

Away from the Humdrum

What is the cure for industrial unrest?

Ask the manual worker and the chances are he will mumble along indefinitely regarding the long and continual exploitation of the worker by capital, ending up with the statement: "Give labor its due, its proper share—bigger wages. That is the cure."

But the manual worker is not, in the general sense, a broad thinker. He knows that something is wrong with him; that a grievance of some kind smolders within him unceasingly, making him crabbed, suspicious, dissatisfied. Because he is not trained to analysis he can conceive of only one cause—that an unfair proportion of the proceeds of his toil.

But wages are not the cure. They have been raised repeatedly and dissatisfaction has only become more acute. Labor has nibbled at the luxuries, then aspired to bite. Given the chance to bite, it would then want to gormandize; and so on indefinitely.

Real thinkers along these lines are veering away from the thought of unrest arising from the fact that labor is abused and toward the idea that its inception lies in the fact that it is "bored."

Men toil for the privilege, it seems, of "satisfying their hunger, providing for themselves a shelter, and begetting their kind"—these latter, their successors, condemned at birth to the same wearisome humdrum.

If life means nothing more than this—and as we review it over a broad field of industrial conditions we are struck with the truth that lies in the thought—then indeed does it seem questionable if it is worth anything at all.

But it can be made different. Real leaders of men can show them the way. And the sooner those leaders veer away from misconceptions as to the real basic causes the quicker the remedy will be found.

Some Means of Selling the Gas Range

Newspaper Advertising and Attractive Window Displays Two Sure Ways of Reaching the Housewife

By ERNEST A. DENCH

This is the psychological time to bring the merits of the gas cooking range before the housewife's notice in every conceivable way. And the two most eloquent channels by which she may be approached are your show window and the local newspaper.

Theatrical Effect

Meier & Frank's, Portland, Ore., draped the back and sides of the window with black velvet. At the center rear was a large gold frame enclosing a woman doll, attired in blue gingham and white apron, standing in front of gas range. Subdued theatrical lighting was employed, thereby enhancing the stage effect.

Paying the Gas Bill

John Breuner & Co., Sacramento, Cal., installed a gas cooking stove in their window, with the gas turned on as in actual use. The reason for this was explained by the following sign:

"We will pay for your first five dollars' worth of gas if you buy your first gas stove here."

Comparison Proof

Power, Portland, Ore., arranged five different makes of gas kitchen ranges on a large grass rug that covered the window floor. Large, round poster in the middle served to announce:

"Comparison Proves .....
Gas Ranges Best"

The Happy Home Maker

Marks, Charleston, S. C., were responsible for "The Happy Home Maker" window. The trim was hung with old blue and white check draperies, while the floor space was covered with a white woven rag carpet. At the rear of the window was a beautiful, nickel-trimmed gas cooking range, containing a complete assortment of aluminum ware as bright as silver. Presiding over the range was a life-size mannikin, clad in a pink and white gingham dress and a white bungalow apron, with a cook's cap on her head. She was engaged in basting a papier mache roast chicken in the oven, and at the same time apparently keeping a watchful eye on the good things to eat the aluminum pots and pans contained.

Window Card Arguments

Public Service, Newark, N. J., recently exhibited in their show windows several different types of gas cooking ranges with a card laid on top of each range. The cards in question are given below:

(1) "Were we to sell ranges based on present cost prices we would have to ask considerable more. You save by our foresight."

(2) "The American Gas Range built in American shops by American labor to cook the meals for American Families."

(3) "Mother is delighted with her new gas range because she knows that dust, fuss, worry and dirt have been banished."

In one of the Public Service Company's windows was a gas toaster, containing deliciously browned pieces of toast. The toaster was placed over a burner on a gas range, which added to the naturalness of the display. A card on hanger above the range pointed out:

"Don't waste stale bread. Toast it on a gas toaster. Price, 35 cents."

Greens, Elizabeth, N. J., placed a gas cooking range at each side of their trim—balanced in the middle with a fully equipped kitchen cabinet.

Best Substitutes for a Maid

The Southern Public Utilities Co., Charlotte, N. C., gave a timely slant to one of their newspaper announcements. It was entitled "The Best Substitute for a Maid," and the cut at the top of the ad showed a contented housewife presiding over a gas cooking range, against the background of a want ad newspaper page. The text matter was as follows:

"Maids are scarce and hard to get—but housewives need not worry.

"Gas Service and the Gas Range are the best substitutes. With a Gas Range cooking is cleaner, cooler, quicker by far than when it is done on a coal stove. The housewife can easily cook on the Gas Range herself with the expenditure of no more time or energy than is ordinarily necessary in giving directions to the maid."

Trial to Test Merits of Range

The Rochester Gas & Electric Corporation, Rochester, N. Y., came in the open with an attractive offer. They were willing to install a gas range in any home on a trial basis. A sufficient period was allowed the housewife to determine whether the range measured up to their advertising claims. If the range fell short of expectations, it was removed, with no hard feelings on the part of the gas company or the prospective purchaser.

The Gas Range Situation in England

While in England I noticed several clever advertising efforts on the part of the gas companies in connection with gas cooking ranges. The gas range business over there is al-

most entirely in the hands of the lighting companies, who make all sorts of inducements, from installing a gas range free of charge to charging a higher rate for the loan of the stove, in order to persuade housewives to use gas. Conditions are different in conservative Britain, and it is only by offering to install gas stoves on advantageous terms that the prejudice of the set-in-her-ways housewife can in many cases be overcome. During the war this sort of thing was stopped to a more or less extent, but the gas companies are gradually renewing their pre-war gas cooking range propositions. However, this does not make the advertising suggestions that appear below of less value in pushing gas cooking range sales in America.

SOME WINDOW CARD HINTS

The Gas Light & Coke Company, London, England, employed the window card route to announce that "Gas Decreases Work and Increases Leisure."

The window display in which the two foregoing cards appeared contained a gas range in the middle, surrounded on the floor by pots and pans for cooking purposes.

The Redhill Gas Company, Redhill, England, informed the housewife that "The Secret of Successful Cooking Lies in Using the Most Modern Gas Appliances."

Co-operative "Build-a-Home" Publicity

BY WILLIAM BLISS STODDARD

Realizing the crying need for more homes and buildings of all kinds and the apathy of the general public on the subject, due to the ruling high prices, a group of the foremost merchants of San Pedro, Cal., a flourishing shipbuilding community, recently decided upon an aggressive advertising campaign to induce a loosening up of the purse strings, and the initiation of a flourishing building boom.

To this end they engaged an entire page of the local paper—the expense being divided pro rata among the twenty firms—and adorned it with a large cut of a California bungalow, and several smaller cuts of groups of houses. Then, in big letters, they advised:

BUILD NOW!

The Community Needs It.
The Conditions Favor It.
You Profit by It.

It is the path to happiness—the great American idea of to-day.

One of the greatest needs of this city at the present time is more houses of moderate size. Build now; help our city grow.

If you own vacant land, make it revenue producing by erecting one or more houses upon it at once. If you have cash, build some houses—the rents will pay good interest upon your investment.

Be your own landlord. It may seem at first impossible to own your own home, but others have done it, and so can you.

DO IT NOW

See one of the firms mentioned on this page, and ask their advice about it.

The lower third of the page was divided into twenty small blocks, in each of which one of the local firms placed its individual ads. These were limited to a few words each, with a suggestion regarding some line of building material or conveniences supplied by that company.

The Southern Gas Company, always quick to take advantage of any move that spells progress, was one of the building boomers, and in their little adlet said: "Use an automatic or tank hot water heater in your home."

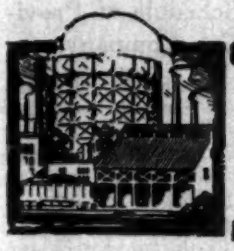
Use of Natural Gas Allowed in Manufacture of Carbon

Wasteful process of manufacturing carbon black by incomplete combustion now frequently used is prohibited by the laws of Texas. But the employment of such appliances as will save usable commercial gas in the manufacture of black carbon is not prohibited, upholds the railroad commission. This opinion is in answer to a letter received from persons at Amarillo, Texas, who desire to establish a carbon plant in the Potter County gas field, but before doing so desired the opinion of the commission as to whether the use of natural gas in making carbon black would be a violation of the conservation statute.

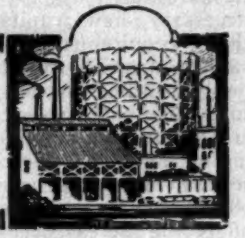
Virginia Company to Teach Gas Conservation

The Monongahela Valley Traction Company, Fairmont, Va., is energetically at work at the present time on plans for conducting an educational campaign which shall prove to everyone beyond the shadow of a doubt that along with all other improvements the time has arrived for a readjustment of plumbing equipment both in the streets and in homes to better conserve gas. The plumbing in Fairmont, some of which was installed 30 years ago, was put together in rather haphazard fashion with many joints minus white leading and when the artificial gas from the Lynn plant was turned into the city mains several weeks ago thousands of small leaks were brought to light because of the odor of the new gas. In fact the new gas has caused such widespread investigation of leaks that on short order hundreds of such leaks have been discovered and remedied proving to the satisfaction of the gas company and residents that many imperfect gas pipes need drastic repairing. Within the past few days larger corporations in the city where gas is used to large extent have reported many leaks repaired so that on a whole the loss of gas which before was not noticeable is now a saving.

The traction company as soon as the proper men are obtainable will have all residences in the city inspected with a view to teaching persons how to save gas and to get the best service from gas through proper regulation of gas equipment, including pipes, heating stoves and cook stoves. Already at the various schools in the city an efficient representative of the traction company, namely R. K. Gallant, is demonstrating how gas may be saved through the right sort of cook stove valves and burners. These may be bought in the city and with little trouble connected in place of the low flat burner which may not be giving proper service. The burner should be only an inch or an inch and a quarter from the kettle and should be adjusted through air valves to give a steady short blue flame and not a wavering yellow long flame, the latter consuming much gas and giving poor service. The traction company declares that in all homes where pipes leak even minutely and which are equipped with wrong stove burners a saving very noticeable is obtained through regulation and a little plumber service.



NEWS OF THE GAS INDUSTRY



Pavilion Gas Company Wins Decision

In the action brought by the Public Service Commission, Second District, against the Pavilion Natural Gas Company of Le Roy, N. Y., in the Supreme Court to obtain an injunction restraining the gas company from collecting the 85-cent rate filed by it February 7, 1920, to go into effect March 10, 1920, on the ground that by filing its new rate, which increased the rate provided for in its franchise, it had violated the law and the order of the Public Service Commission. Judge Hinman of Albany has handed down a decision denying the motion of the commission for an injunction and dismissing the complaint of the Public Service Commission, with costs.

Judge Hinman holds that the Pavilion company was permitted by the law to file the new rate as long as it complied with the law in filing it and that the company has pursued the only course which the law prescribed for putting into effect an increase of rates.

He also holds that even if the new rates are greater than the franchise rates, there can be no violation of law in doing what the law permits it to do; that the law presumed the new rate is fair and reasonable after the thirty days' period unless and until the commission acts.

Judge Hinman says that there is no power of suspension of the rate pending the investigation, and the investigation must be a real one and not simply a conclusion of fact pronounced by the commission without sustaining evidence.

By its order of April 1, 1920, wherein it held that the franchise rates were just and reasonable it attempted to enforce specific performance of the franchise agreement. This it cannot do directly or indirectly, except after hearing and determination on the merits.

Gas Companies Should Report Coal and Oil Shortage

The acting secretary of the National Committee on Gas and Electric Service advises that the Washington representative of the committee is in daily personal touch with the Interstate Commerce Commission, presenting the individual cases reported by gas and electric light and power companies of shortages in the coal supply. Cases requiring action should be reported direct to the offices of the committee at Room 950, Munsey Building, Washington, D. C.; but it must be remembered that action can only be secured where full information is given, including the amount of coal actually on hand and the rate of daily consumption, the name of the contractor or shipper, the location of the mines, and the railway or railways over which delivery is made.

Southwestern Gas and Electric Men Meet

Men representing gas and electrical interests from all over the Southwest attended the fifteenth annual convention of the Southwestern Electrical & Gas Association, which held a three-day session in the Hotel Galvez, Galveston, Tex., May 12 to 15.

Questions vitally affecting both these industries were on the program for discussion by leaders in public utilities from cities not only within the association's territory but also from the larger metropolitan centers.

"The Work and Results of the Illinois Committee on Public Utility Information" was discussed by Bernard J. Mullaney, of the People's Gas, Light & Coke Company, Chicago.

J. F. Owens, manager of the Oklahoma Gas & Electric Company, spoke on "Your Association."

"The Successful Financing of Public Utility Needs," by G. L. Burr, of the Guaranty Trust Company, New York City, was one of the most interesting papers read.

Mr. Burr said that the public utility companies of America, struggling "between the upper millstone of regulation and the nether millstone of rising costs of operation," can attract new capital and offer a safe investment only by creating a genuine and effective interest among their customers and the people in the territories they serve.

Public utilities must be regarded not as outsiders but as integral parts of their communities, which must be fostered and developed as much as any other industry. Continuing, Mr. Burr said:

"It is generally felt among investors that many public utility companies have not had the public support which is due to them as honestly and ably managed public servants, and that the problems of these companies and the just deserts of their owners and creditors have not been appreciated by the public bodies. It is therefore feared by many that, as a result of the combination of these circumstances and the rising costs of operation, financial disaster for many companies may be just around the corner in the shape of possible disappearance of 'net after taxes.'

"Compare on any such basis the case of the public utilities with the flexible earning power and favorable current asset position of an industrial company, and it is not difficult to understand why it is almost impossible to-day to finance any but the exceptionally fortunate public utilities. I do not wish to paint too black a picture, but I would be neglecting my duty if I did not present to you quite frankly the point of view of the investing public for whose funds your companies must sooner or later become bidders.

"To summarize briefly: Comparatively few of our public utili-

ties are now able to attract the necessary new capital to meet their requirements. The chief causes of this situation are that public utilities are not in their nature liquid enterprises; that in general, because of lack of understanding on the part of the communities served, they have been unable to obtain rate increases sufficient to offset the increased cost of operation and of new capital, and finally because the investing public fears the result which still further increased costs would have upon many of these companies and lacks confidence in the regulatory commissions, part of whose duty is to aid the companies in meeting their problems.

"The public in general has little difficulty in recognizing the fact that the prosperity of any section of the country depends upon the prosperity of its industries. Your communities would not dream of so regulating the cotton industry that the planter could not operate at a profit; but many people believe that they can force their public utilities to operate with a very narrow margin of profit and at the same time avoid all evil consequences incident to an inevitable decrease in service.

"The larger purpose of any undertaking is not the development of this industry or that industry, but the creation of greater productive capacity for the country as a whole, in order that all its citizens may share in its increased wealth and its enlarged opportunities for work and the 'pursuit of happiness.' In spite of its tremendous strides in the raising of cattle and the production of cotton and oil, there is no part of the country more susceptible of still greater development than the Southwest. The surface has only been scratched; its growth has just begun.

"Development cannot take place without the service provided by public service corporations, and that service can be neither increased nor improved without additional capital. It is useless to plant cotton or drill for oil unless it can be shipped to market; it would be intolerable to live without the public necessities supplied by your companies. What is the decision of the Southwest? Will it jeopardize its future because of lack of understanding of your particular industry and its vital relation to welfare and progress? I think not; but the golden moments are passing, and time which has been lost can never be regained."

1921 Convention of Natural Gas Association to Be Held in Cincinnati

Cincinnati was chosen as the place for the sixteenth annual meeting of the Natural Gas Association, which will be held in May, 1921.

The newly elected directors are: T. O. Sullivan, Pittsburgh; John T. McMahon, Cleveland; Freeman T. Eagleson, Columbus, Ohio; R. G. Altier, Charleston, W. Va.; Alfred Hurlburt, Pittsburgh, and J. D. Creveling, New York City.

The Association of Natural Gas Supply Men at its annual meeting elected directors as follows: A. W. Thompson, St. Louis; William Patterson, R. A. McKinney, Fred W. Miner, William McKee, O. F. Felix, William B. Way and E. S. Rooney, all of Pittsburgh; Fred A. Miller, Bradford, Pa.; T. C. Clifford, East Pittsburgh; E. D. Roper, Rockford, Ill.; F. R. Hutchinson, Cleveland, Ohio; Larmour Adams, Erie, Pa., and B. T. Bechtel, Chicago.

New officers are: President, William McKee, Pittsburgh; vice-president, Fred A. Miller, Bradford, Pa.; treasurer, Thomas C. Clifford, East Pittsburgh; secretary, William B. Way, Pittsburgh.

City May Purchase All Equipment of Omaha Gas Co.

The Metropolitan Water Board has advised Mayor Smith of Omaha, Neb., that it would be agreeable if the city will buy all supplies and accounts receivable of the Omaha Gas Company at the time of the formal purchase of the gas plant on July 1.

The supplies will include gas stoves and other fixtures. The accounts receivable will amount to more than $100,000, which will be the June bills and for which the city will be reimbursed within a few weeks after municipal ownership.

A check is now being made of the improvements and extensions which have been made since June, 1918, the date of the appraisement. These improvements, together with supplies and accounts receivable, will amount to approximately $300,000, which will be added to the appraisal amount of $4,500,000.

New Rate Schedule of Providence Gas Company

The advance schedule of rates which applies to consumers of gas in Providence, Cranston, East Providence, Johnston, North Providence and Warwick, R. I., is as follows: For the first 10,000 cu. ft. used in any one month, $1.25 per 1,000. Added to this is the service charge of 50 cents per month. For the next 90,000 cu. ft. used in any one month, $1.15 per 1,000, with the additional charge of 50 cents for service. All gas used in one month in excess of 100,000 cu. ft. will be billed at $1.05 per 1,000, plus the 50 cents per month service charge.

The new rate, which affects mostly domestic consumers, is in place of the former charge of $1.30 per 1,000 for the first 5,000 cu. ft. The 50-cent service charge takes the place of the former 50-cent minimum charge.

Most gas users are accustomed to using gas in quantities in excess of the account for which a minimum charge is billed, and the service charge of 50 cents will therefore be an added amount to their monthly bills.

Oldest City of Illinois Now Without Gas

Galena, Ill., is without gas, the plant is being dismantled and residents are purchasing oil lamps and wood stoves. Galena, the oldest city in Illinois will be lightless as the plant serving it for the last 70 years is being dismantled and householders are back again where they were in civil war times.

Failure to receive sufficient rates led to a receivership a year ago. Eight months ago the plant was sold by the sheriff. Now it is being entirely closed down.

Houston Company Buys Gas Plant

The gas plant at Brenham, Texas, has been purchased from R. E. Pennington by the Callahan Company of Houston, Texas, and in the near future the company will drill for natural gas near Brenham, states John T. Callahan, general manager.

With a supply of natural gas prices will be greatly reduced to the consumer.

Work on extension of mains will start at once.

M. B. Daly, President of East Ohio Gas Co., Explains Gas Conditions in Ohio

M. B. Daly, president and general manager of the East Ohio Gas Company, Cleveland, Ohio, stating that there seems to have been obtained the impression that the East Ohio Gas Company is demanding 80 cents for gas and which is quite contrary to fact and that many misstatements have been made with reference to the excessive earnings of the company and its source of supply, all of which he says, have been without foundation in fact sends the following:

The company, in order to conserve the gas left in the field and prolong its life for the benefit of the domestic consumer, suggested that to those who use in excess of 20,000 ft. in any one month, the additional amount be charged at the rate of 80 cents per 1,000 ft., the price for the first 5,000 to be 45 cents and this would care for over 54 per cent of our customers; the next 5,000 ft. to be 50 cents, the third 5,000 ft. at 60 cents and all over 20,000 ft. at 80 cents.

You will readily see the object in doing this, and it is our opinion that the sliding scale upward will not materially increase the revenue of the company.

There is a necessity for an increased rate, notwithstanding the propaganda that has been spread about the enormous earnings of the company. There are many items to be considered in addition to the mere gross and net revenue. In the first instance, this is an earning on the actual investment of nearly fifty millions of dollars; surely not an adequate one. Secondly, the decline in the West Virginia field last year was 10.7 per cent. Based on this decline, we assume that the supply from that State will be available for Ohio consumers for a period of about eight years, or 12½ per cent depreciation on transportation pipe line system in which there is an investment of approximately twenty million dollars. When the field is exhausted the salvage would probably not exceed the cost of taking up and junking the pipe lines. There is no demand for large pipe such as The East Ohio is using in its transportation system.

Again, if we eliminate the gross profit on gas sold for domestic purposes above 20,000 ft. per month per customer, we will lose $750,000 net revenue. We will also lose the profit on gas sold for manufacturing purposes, which, based on 1919 sales represents a net earning of $1,100,000. This gas was sold during the summer months and at the same rate per thousand as domestic.

If these deductions are made—and it is only a fair business proposition—the net earnings of the company would be reduced to approximately $300,000 last year, or 3/5 of 1 per cent on its investment.

We note the reports of other large mercantile establishments making 40 to 50 per cent. These institutions are dependent upon the public for revenue the same as public utilities, yet there is no criticism.

The purpose in asking 80 cents for the larger quantity of gas is to prevent its use during the winter months and enable the company to give good service to those using the smaller amount. It is the application of the principle, "The greatest good to the greatest number." At least 85 per cent of our customers will be benefited, while the 15 per cent will be inconvenienced to the extent of burning coal for heating purposes.

You will understand that the 15 per cent use larger quantities of gas, and if the company could obtain the supply their patronage would indeed be very desirable.

New Jersey Gas Companies Granted Higher Rates

The Elizabethtown Gas Light Company, and its subsidiaries, Cranford Gas Light Company, Metuchen Gas Light Company and Rahway Gas Light Company, have been given permission by the Board of Public Utility Commissioners of New Jersey to charge $1.15 for gas.

In another decision the Perth Amboy Gas Light Company will be permitted to charge the same rate.

The board in the Elizabethtown case suggested that the concerns file before May 25 the new rate schedule of $1.15 to become effective June 1. The same order was made for the Perth Amboy company.

Gas Employees Hold Dance

A very enjoyable social event was a barn dance given by the members of the Flatbush Gas Company, of Brooklyn, N. Y., on June 4 at Kismet Temple. Joseph P. Mulvihill was chairman of the committee in charge of arrangements.

Helium Gas Plant Moved to Virginia

The entire army helium plant, which was located at Petrolia, Tex., where experimental work in the extraction of helium from natural gas was conducted, has been moved to Langley Field, at Hampton, Va. The plant equipment was considerably damaged in shipping, and it will be with difficulty that certain parts can be replaced, due to the intricate nature of the equipment. This plant will handle the new non-inflammable gas for lighter-than-air craft.

Shenandoah Gas Makes Application for Change in Rates

The Shenandoah Light, Heat & Power Company, Shenandoah, Pa., has filed with the Public Service Commission a supplement to its tariff rates governing the supply of gas at Shenandoah, Pa. The new schedule is as follows:

Increases — Under schedule for light and domestic fuel service a service charge of 50 cents per month per meter is added, and for each month's consumption of gas the rate is increased from $1.50 per 1,000 cu. ft. to $1.70 per 1,000 cu. ft. The service charge of 50 cents per month is also added to schedule for industrial service, and the rate for each month's consumption of gas is increased from $1.30 to $1.50 per 1,000 cu. ft. The charge for restoring service to any premises from which service has been discontinued is increased from $1.00 to $3.00.

Changes—The net rate applies on bills paid within fifteen days from the date thereof instead of when paid on or before the 10th day of the month following that for which bill is rendered, as heretofore. Bills are due when rendered instead of upon the first day of the following month, as heretofore.

Gas Plant Sells for $46,000

Erected by the Federal Government in 1918 at a cost of more than $500,000, the Person Gas Plant, New Diggings, Wis., has been sold to Chicago junk dealers for $46,000. The Wisconsin Zinc Company purchased the buildings which will be used as storage warehouses for zinc ore. The 150 ft. smokestack was sold to the Tri-State Products Company of Galena, Ill.

Governor Coolidge Would Aid Gas Companies

Governor Coolidge of Massachusetts, in a recent message to the House, recommended legislation to enable gas and electric companies to issue stocks and bonds at a rate of interest higher than the maximum of 6 per cent annually, as now prescribed by law.

He called attention to the plight in which these companies find themselves as the result of the condition of the money market. He pointed out that they are unable to finance themselves to provide for meeting maturities on stocks and bonds.

The Governor declared there are two courses open; to increase the charge made to the public for gas and electric light service to such an extent as to insure returns considerably in excess of what has heretofore been the policy of this commonwealth, or provide temporarily for financing at an interest charge in excess of 6 per cent. It seems perfectly apparent that the public welfare would best be served by the latter course. It is therefore recommended that the rate of interest at which such companies can issue bonds and notes which may be issued within a period not in excess of five years from the taking effect of this recommendation as law, be at such a rate as is approved from time to time by the department of public utilities.

Gas Company Asks Higher Rates

Application for an increase in gas service rates has been filed with the Illinois State Public Utilities Commission by the Logan County Gas Company of Lincoln, Ill. The rates asked are:

First 2,000 ft., $2.20; next 3,000 ft., $2.10; next 5,000 ft., $2.00. All over 5,000 ft. $1.90.

The present rate is $1.40 net.

An increase in the minimum bill from 35 cents to $1.00 is also asked.

At the present time, the net charge for minimum use of gas is 35 cents per month. This means that if you use no gas, this charge is practically meter rent. Under the application for an increased rate, the minimum charge would be $1 per month. It means that the minimum user would pay $1 net where he pays 35 cents now, a difference of 185 per cent increase on this charge.

The rate now paid by the small user is the net charge of $1.40 per 1,000 ft. If a man used 1,500 ft. of gas his net bill would be $2.10 for the month. Under the new schedule, the rate per 1,000 ft. is $2.20 net as against the old rate of $1.40, and the user of 1,500 ft. of gas would have a bill of $3.30 net where he formerly paid $2.10.

The raise of this bill from $2.10 to $3.30 means a raise of 57 per cent. Thus the minimum rate is advanced 185 per cent and the average small user goes up 57 per cent.

Oklahoma G. & E. Maintains Efficiency Department

For the benefit of its gas consumers and for their unlimited use without charge, the Oklahoma Gas and Electric Company, El Reno, Okla., now maintains a Gas Efficiency Department. This department is directed and operated by expert gas men whose experience has been such that their services will be in the nature of consulting engineers for home problems.

The department is charged with the duty of assisting consumers in getting the best possible results from gas used, looking over gas stoves and appliances, determining economical measures for the help of the consumers, working out satisfactory arrangements for heating either in houses to be constructed or in those already built, inspecting house piping and helping the customers in every way possible along these lines.

The service of this department may be secured by merely requesting its help and the satisfactory solution of every problem which will help the customer cut down his bill, save gas and give him more efficient and economical service, is its duty. No problem is too small for it to work out in co-operation with the gas user.

A telephone call or written request will bring one of these efficiency men to any house, where he will go into every detail which may be of assistance.

The West Boston Gas Company, Boston, Mass., has petitioned the Department of Public Utilities for an indefinite increase in the price it may charge for gas in the towns of Framingham and Natick, Mass. At present the Framingham price is $1.75, while the amount charged in Natick is $1.85.

Natural Gas Supply Failing Fast

Unless the supply of natural gas is conserved the fields which now supply, Dayton, O., will be exhausted within a year or two, according to figures given City Manager Barlow by the Logan Gas Company. In 1901 that company claims, the pressure in their wells was 960 lb.; in 1904, 874 lb.; in 1907, 746 lb.; in 1912, 451 lb., and in 1919, 140 lb.

During the first four months of the present year Dayton has drawn more than two-thirds of the gas in the main lines leading into Indiana, charts show. The pressure in Dayton has consequently been higher than at any of the Indiana stations. On April 4, when the gauge showed a pressure of 12 lb. in the main line in Dayton, Muncie, Ind., had only three-fourths of a pound.

"It is very evident that the solution to the gas problem must come very soon, possiby before next winter,' Manager Barlow said. "And the only answers are, conservation or artificial gas. The latter we do not want, owing to the increased cost. Artificial gas costs from $1 to $1.50 a 1,000 as compared with 34½ cents for natural, and is only about one-half as efficient."

A sliding scale, by which the cost per 1,000 ft. increases with the increase in consumption, is recommended. It is thought probably that the city commission will pass an ordinance providing for the sliding scale.

Keene G. & E. to Increase Service Charges

The Keene Gas & Electric Company, Keene, N. H., has filed notice with the Public Service Commission at Concord of its intention to increase its charges for its gas service in Keene, beginning June 1, by adding 25 cents per month for each class of service, as specified in the published petition and notice—in other words for its monthly meter charge—also a charge for moving meters for the convenience of customers. This increase, if authorized, will add a percentage to the monthly charge to all gas customers and will yield to the company a larger revenue to meet increasing costs without change in the prices of gas per thousand feet.

Personal Notes

Charles A. Silsbee Fifty Years a Gas Company Employee

Charles A. Silsbee, this month 50 years in the employ of the Lynn Gas & Electric Company, Lynn, Mass., was paid an unusual tribute for his faithfulness when 150 of the men employees of the company tendered him a reception and presented him with a check for $250.

A half century ago, when Mr. Silsbee entered the company's employ, he at first did general office work. He was then but 19 years of age, and born in Lynn had only worked for one other employer, for a time at a local hardware store.

Somewhat later he became the company's sole meter reader at a time when there were only 1,000 customers. Still later and for many years he had charge of steel construction work for the company, but more recently has found the task of floorman a lighter one.

Apart from the fact of paying homage to an employee a half century with the company, the occasion was unusual because most of the following employees, all of them a quarter century or more with the company, were present:

Gas works operating, John J. Corbett, Martin B. Corbett, John Evans, Garrett Wall, John Wall; machinists, Michael F. Moran; electric department, Thomas A. Higgins, Edward Jones, Harry R. Kidger, Laurie F. Musie, Roderick E. Roberts, Louis C. Wagner, George P. Young, A. W. Jones; work shop, Wm. J. Greer, Alexander Wallace; gas mains and services, Jeremiah J. Mahoney; gas works general, Bernard Fitzpatrick; salary list, J. F. Dubois, F. E. Chase F. W. Mace, C. L. Simonds, S. L. Bailey, J. R. Killilae, S. E. Brown, C. A. Silsbee, W. F. Norcross.

G. B. Barnett, manager of the new-business department of the Bartlesville (Okla.) Gas & Electric Company, has left for Joplin, Mo., where he will be manager of the new-business department of the Empire District Company, another Doherty property. This is a well-deserved promotion for a man who has been of great value to the Bartlesville Gas & Electric Company and has made many friends in Bartlesville in the time that he has lived in the city. In his new capacity Mr. Barnett's territory will include Joplin, Carthage, Webb City, Carterville, Pierce City, Monette and Granby, Mo., Baxter Springs and Galena, Kan., and Picher and other mining towns in northern Oklahoma.

F. H. Hawkins has resigned his position as general gas superintendent of the Orange County Public Service Corporation, Middletown, N. Y. He has not yet made any plans for the future. Before coming to Middletown Mr. Hawkins was works superintendent of the Plymouth (Mass.) Gas Light Company.

Edward J. Cheney has opened an office at 61 Broadway, New York, for a general engineering and consulting practice. He will give particular attention to public utility problems, including rates, appraisals, public relations, design, construction, operation and management. Mr. Cheney has for several years been connected with the Public Service Commission, Second District, New York, and resigned the position of chief of its division of light, heat and power in order to take up consulting work. While with the commission he was in charge of all general and technical questions concerning gas, electric and steam-heat corporations, and the service rendered by them. In addition to routine testing and inspection of meters, lines, plants and service, and handling all complaints and general correspondence, this work involved the making and checking of inventories and appraisals, and investigations and reports in connection with service, construction, purchase, capitalization and rate questions. Mr. Cheney is a graduate of the University of Minnesota, with the degree of E.E., and is a member of the honorary society of Sigma Xi. After graduation he was employed by the General Electric Company at Schenectady, N. Y., where he was successively connected with the testing, the alternating current engineering, and the power and mining engineering departments. In the latter department he was engaged in general engineering problems, first in making investigations, selecting apparatus, preparing specifications and assisting in commercial matters, and later in making special investigations and reports in connection with electrification and reconstruction problems. Mr. Cheney is a member of the Aurania Club of Albany and the Engineers' Club of New York. He belongs to the National Electric Light Association and is a Member of the American Institute of Electrical Engineers. For some years he has been a member of the standards committee of the A. I. E. E., and for the last two years he has been secretary of that committee.

George T. Eldridge, who was connected with the Harrisburg (Pa.) Gas Company for thirty-five years, died recently in Philadelphia. Three years ago Mr. Eldridge retired from active service, receiving a pension on his retirement.

Arthur D. Little, Inc., of Cambridge, Mass., has been engaged by the city of Boston to investigate the gas-manufacturing practice of the Boston Consolidated Gas Company to ascertain if conditions justify an increase in rates to consumers.

Junior Marshall has resigned his position with the offices of the Baltimore & Ohio Railroad at Connellsville, Pa., to enter the employ of the Fayette County Gas Company, Uniontown, Pa.

William S. Riselay, who had for so many years been connected with the gas interests of the city of Buffalo, N. Y., has severed his connections and after a month's vacation at Atlantic City, will join his son, Edmund G. Riselay in the Riselay Tire & Rubber Company and his other interests.

The Salem (Mass.) Gas Light Company has petitioned the Department of Public Utilities for permission to increase its rates to the consumer from $1.40 to $1.80 per 1,000 cu. ft.

May Party Given by Boston Gas Company Employees

The Boston Consolidated Gas Company Associates entertained about 600 guests at their second annual May party.

Joseph Sheehan was floor director, with Norman Gentle, Charles Pilato, John Donovan, Fred Todd and William McMahan assisting.

The reception committee consisted of John Lane. Charles Duffley, John Hooper, Miss Marion Maloney, Miss Madeline Flannery, Miss Mary Shields, Miss Helen Hogan and Miss Celia Saunders.

The proceeds will be used for a summer camp for the members of the organization.

Sixth National Exposition of Chemical Industries

The 1920 annual—which is the Sixth National Exposition of Chemical Industries—returns to the Grand Central Palace in New York where it will be given during the week of Sept. 20 to 25 inclusive.

The exposition this year will be more pretentious than ever; in fact, it will be the largest distinctly industrial exposition ever held, and will surpass its own predecessors by one-third.

There are now engaged for the coming exposition 358 exhibitors which is more than in the last exposition in Chicago. The growth of this exposition is remarkable and in a way indicates the growth and development of the chemical industries in America. In 1915 the first exposition was composed of eighty-three exhibitors, the second increased to 188, the third to 288, the fourth to 334, and the fifth, in which the available space was much restricted, and exhibitors were held to a minimum to admit 351 exhibitors, the present number of 358 the managers tell us cannot be much increased in number because of the limited amount of space remaining. Another floor had been added giving four floors of the Grand Central Palace, each of which covers a whole square city block, so that exhibitors could secure increased space and not suffer the cramping felt in the last exposition.

Quite as remarkable as the growth of the exposition itself is the increased attendance and interest that is shown in the exhibits. To the first exposition there came 63,000 visitors, to the second there came 80,000, and this has steadily increased till at the last there was in excess of 111,000. One who has watched the development of the exposition and the interest of the visitors can testify to the great improvement in character of representatives the manufacturers have in attendance with their exhibits and the whole-souled way in which they give valuable information and discuss the details of the nature of the many materials on exhibit.

This year the exposition will have three special sections, one, the electric furnace section, another the fuel economy section, and the third a materials handling section. The two latter are new sections. The first will as its name implies be one of electric furnace exhibits. The fuel economy section will consist of exhibits of machinery and apparatus, furnaces, producers, stokers and all devices for the economic utilization or more efficient combustion of fuel. The possible exhaustion of our fuel reserves in the not far distant future and the present high cost of fuel makes this section one of much interest to all industrial plants. The materials handling section will be a series of exhibits of machinery and equipment for the handling of material such as conveying, transporting, elevating, and included in this will be weighing, measuring and power transmission equipment. So important have these mechanical features become for all industrial plants due to the shortage and high-wage for man-power that an unusual interest is expected in this new section.

The program for the exposition will have sessions on subjects the phases of which will be developed in the exhibits of these latter two sections. There will be sessions on chemical engineering for which an elaborate program is planned. Motion pictures which will have a keen interest for technical men will form part of the program, and there will be popular public addresses as well.

The committee for the exposition consists of Charles H. Herty, chairman, editor *Journal of Industrial & Engineering Chemistry;* Raymond F. Bacon, director, Mellon Institute; L. H. Baekeland, member, Naval Consulting Board; Henry B. Faber, consulting chemist; Ellwood Hendrick, president, the Chemists' Club; Bernhard C. Hesse, chemist, General Chemical Company; W. S. Landis, president, American Electrochemical Society; A. D. Little, president, Arthur D. Little, Inc.; William H. Nichols, chairman, board, General Chemical Company; W. A. Noyes, president, American Chemical Society; H. C. Parmelee, editor, *Chemical & Metallurgical Engineering;* Fred W. Payne, co-manager, exposition; R. P. Perry, vice-president, the Barrett Company; Charles F. Roth, co-manager, exposition; T. B. Wagner, vice-president, U. S. Food Products Corporation; David Wesson, president, American Institute Chemical Engineers; M. C. Whitaker, president, U. S. Industrial Chemical Company, and the managers, as in the past are Charles F. Roth and Fred W. Payne.

Postpone Natural Gas Conservation Meeting to June 11

The meeting of the Natural Gas Conservation Committee which was originally scheduled for May 25 has been postponed to June 11, when members of the committee and subcommittees and representatives of governors of natural gas using States will assemble at the Bureau of Mines, Washington, D. C., to formulate official economic recommendations for the guidance of producers and users of natural gas. These resolutions will cover the three phases of the natural gas situation —production, transmission and utilization—and after they are finally adopted by the committee will be promulgated throughout the country in the interests of conservation of this great natural resource.

Rate Increase Announced by Wakefield Municipal Plant

Another increase in gas rates has been announced in a special advertisement of the Wakefield (Mass.) Municipal Light Plant.

The new rate takes effect June 15 and will be $1.80 net per 1,000 cu. ft. Bills will be figured at the rate of $2, with discount of 20 cents per 1,000 cu. ft. for prompt payment in fifteen days.

The present rate is $1.60 net and has been in effect since Oct. 1, 1919.

Under the new rates for gas there will be a discount of 35 cents for gas used in excess of 30,000 cu. ft. up to 40,000 cu. ft., making the net rate for that amount $1.65. Above 40,000 cu. ft. the net rate will be $1.55.

The last raise in rates for gas was on Oct. 1, 1919, when the price went from $1.50 to $1.60 net.

Massachusetts Gas Earnings Show Increase

The combined net earnings available for dividends of the Massachusetts Gas Companies for April showed an increase of $322,071, compared with the corresponding month last year. The net earnings of the gas department compare as follows:

	1920	1919	1918
Boston . .	$117,463	$102,892	$108,942
E. Boston	6,343	*3,392	*316
Quincy .	8,073	5,592	4,292
Newton .	19,619	3,960	2,801
Totals . .	151,499	109,019	115,720

*Deficit.

Franchise Granted Kingsville Gas Company

The City Commission passed an ordinance granting to the Kingsville Gas Company, Kingsville, Texas, a franchise covering a period of twenty-five years. This company proposes to begin the installation of its mains from present gas well to the city limits as soon as the franchise becomes effective.

The company will then supply to the industries of the city fuel for commercial purposes. The extent of the gas field, having never been proven, this step is in the nature of an experiment, and capital, neither local nor foreign, can be induced to lay a complete system of pipes for distribution of the gas to all sections of the city until a practical test has been made. For this reason the franchise ordinance does not require the company to begin the installation of a system covering the entire city until one year from the date of the franchise becoming effective.

That the company means business is evidenced by the fact that the pipe to be used for conveying of the gas from the well to the railroad shops, light plant and other industries, is already in transit.

After a careful study of rates, by the city officials, in the office of the Bureau of Municipal Research at Austin, Texas, an ordinance was passed by the City Commission fixing the maximum rate at 50 cents per 1,000 cu. ft. This rate is well in line with rates charged in other cities of the State.

The City Commissioners, in granting this franchise, believe they have acted for the best interests of the citizens, fully protecting them in the matter of rates, etc., yet opening the way for cheap fuel in the home and industrial life of Kingsville. After the year's test has been made and the extent of the field has been proven, development projects will begin in earnest. Already inquiries are becoming to come in as to the extent of the field, rates on the gas, water supply, etc., forecasting the location of factories and other enterprises.

Natural Gas Bills Approved

Two natural gas bills, introduced by Senator Swift of Buffalo, went through the Legislature without much discussion and have been signed by the Governor. One empowers the Public Service Commission to compel natural gas companies to mix artificial gas with their product in sufficient quantity to give adequate service. The other legalizes a sliding scale upward, like the one now in force in Jamestown, N. Y. The Public Utilities Commission of Pennsylvania will not permit a sliding scale.

We believe that the flat rate per thousand is more just to all concerned, notwithstanding the claim that gas is conserved by increasing the price. Most householders will use as little gas as they can, the quantity depending upon their necessities. There should be one rate to all per 1,000 ft. of gas and no discriminations.

Michigan Companies Want New Gas Rates

The Lansing Fuel & Gas Company and the Grand Haven Gas Company have both applied to the Michigan Public Utilities Commission for increased rates.

Gas must advance in Lansing at least 13 cents a 1,000 cu. ft. for the company to break even. The figures show a deficit of $22,125.70 for the year ending March 21. The company asks that a temporary increase be granted until final rates are fixed. The Grand Haven Gas Company, besides asking a temporary increase in rates also asks approval of the issuance of $50,000 preferred stock.

The Michigan Public Utilities Commission may change the method of fixing rates for artificial gas in this state. The proposed new plan being based on the Indiana method and provides a primary charge for readings to serve to care for all fixed charges, including a fair return on the investment, depreciation and taxes, and a secondary or consumption charge, which would vary to cover operating expenses. The commission will investigate.

Vancouver Gas Company to Build New Plant

The Vancouver Gas Company, Vancouver, B. C., has announced plans for the erection of a new gas plant at a cost of $340,000. It will have vertical retorts. The only other cities in Canada that have these are Ottawa and Montreal. The gas company will make gas from coal only in future, the manufacture of gas from oil has become too expensive. When the new plant is complete the daily capacity will be 2,000,000 ft.

Scarcity of Coal Forces a Change to Water Gas

On account of a shortage of gas coal the Rochester Gas & Electric Company, Rochester, N. Y., has been forced to fall back on th eold water gas plant. This change has been sudden. Production at the coal gas plant has slumped off to about a third capacity. There has been a corresponding rise in the water gas production, which has caused many complaints. As the burners all have to be readjusted.

The specific gravity of water gas is very much heavier than that of coal gas. As compared with air, the specific gravity of water gas is .65 while coal gas is only .40. The effect is that the water gas does not flow through the burners as rapidly as the thinner, lighter, coal gas.

The burners which have been set for a mixture that contains a higher percentage of coal gas, now give too much air for the slow moving water gas, and the effects of low illumination and flickering burners in gas stoves results. The need is to shut down on the air so that it is adjusted to the slower gas.

And should abundance of gas coal be forthcoming again, so that coal gas could again be manufactured in the usual quantities, it would be found that the burners would again need adjusting. This time there would not be sufficient air for complete combustion and soot would accumulate in burners and on the cooking utensils used about the gas stoves.

To Issue $10,000,000 Temporary Certificates

An order has been issued by the Railroad Commission granting to the Pacific Gas and Electric Company of San Francisco, Cal., authority to issue $10,000,000 of temporary certificates, the certificates to be secured by deposit of $15,000,000 of the company's bonds.

At the hearing of the application before E. O. Edgerton, president of the commission, John A. Britton, vice-president and general manager of the Pacific Gas and Electric Company testified that in his opinion the company in 1920 should expend at least $10,685,746 for necessary additions and betterments and that if funds are available should expend an additional $2,376,680, making a total of $13,062,426.

Asks Congress to Control Gas

Limiting natural gas to domestic use and placing it under government control as a commodity sold in interstate commerce and transported in pipe lines as common carriers among Ohio, West Virginia, Pennsylvania and New York was urged in a resolution introduced in City Council of Cleveland, Ohio, by Councilman J. R. Hinchliffe.

Immediate action by Congress was asked to "stave off efforts of the companies to conserve gas by doubling prices to consumers." Copies of the resolution are to be sent to members of Congress representing the four states affected.

Hinchliffe recited eleven counts in his resolution as causes for action by Congress, as follows:

That the East Ohio Gas Company, supplying the Cleveland district, states the supply of natural gas is almost exhausted and will soon be a thing of the past.

That companies supplying West Virginia, Ohio and New York agree with the East Ohio that conservation must be begun at once.

That they have outlined conservation plans by doubling the price to consumers.

That millions and millions of feet of natural gas are used in manufacture.

That natural gas is being diverted to industrial uses which deprives the people of its use.

That there are greater profits to the companies in industrial uses.

That a real menace to public health would result by depriving people of the four states of the use of natural gas when tens of thousands of homes are equipped for gas fuel alone.

That great financial loss would result to millions in the four states were natural gas discontinued or rates doubled.

That natural gas is carried in pipe lines which are carriers across the boundaries of the four states.

City's Growth Shown by Gas Consumption

The remarkable growth of Modesto, Cal., during the past three years was shown in the figures presented to State Railroad Commissioner Brundage at the hearing of the Modesto Gas Company for an increase in gas rates.

Harry L. Matthey, engineer for the commission, reported that Modesto consumed 55,000,000 cu. ft. of gas in 1919 and that it is estimated that 63,000,000 ft. will be used during 1920. In 1917, the total number of users in Modesto numbered 1,300, while to-day there are 1,740 consumers being served. Gas in 1917 could be produced for about $1 per 1,000 cu. ft., but to-day it is costing the company $1.87 to make the same amount of gas. Increased cost of oil, labor and improvement were the reasons given for asking an increase in rates.

To Teach Gas Conservation in Oklahoma

As a part of the United States government program of natural gas conservation and use, the Bureau of Mines has set aside a sum of money to be used exclusively in Oklahoma for lectures and demonstrations. This fund will be devoted to providing a natural gas expert for home economics and similar organizations at their meetings in the various cities and communities in this state. Miss Olga Elifritz, national gas authority, who is now attached to the staff of the station at Bartlesville, Okla., will devote half of her time to this work and will give lectures wherever her services are requested.

Clubs and household economics organizations in any part of the state may secure Miss Elifritz's appearance on their programs by writing to the U. S. Bureau of Mines, Bartlesville, Okla. Her lectures may also be secured for schools and educational classes by communicating with Miss Mabel Potter of the state vocational training department, with headquarters in Oklahoma City. The government will provide the lecture and demonstration without expense to the school or club.

Supreme Court Dismisses Gas Company Suit

A petition brought by the Boston Consolidated Gas Company against the Department of Public Utilities for a mandamus to compel the latter to approve a contract made between the gas company and the New England Fuel & Transportation Company, under which the gas company was to pay the fuel and transportation company 35 cents per 1,000 ft. for gas, has been dismissed by the Supreme Court, which says the board has already done all that is necessary to make effective the price of 35 cents per 1,000 ft.

Company Refuses to Accept Gas Ordinance

The Medina Gas & Fuel Company, Medina, Ohio, has refused to accept the ordinance, granting it the right to raise its rates from 35 cents to 45, 50, 55 and 60 cents, according to a graduated scale. The reason for the refusal was the clause that compelled the company to maintain a pressure of 8 oz. on the penalty that if it did not, then the old rate was to be restored.

The ordinance, as originally submitted, did not contain this clause. In the discussion in council over the ordinance, Assistant General Manager Ewing, of the company, was asked the question of a sufficient supply of gas and maintenance of pressure. He replied that, if the increase was granted, the pressure would be maintained, and he himself wrote in the clause.

The week following Village Clerk Ainsworth received a formal letter by registered mail from the company's offices at Wooster. It assigned no reasons for the refusal, its salient feature being as follows:

"The Medina Gas & Fuel Company hereby notifies the City Council of Medina, Ohio, that it refuses to accept and hereby rejects a gas ordinance passed by the City Council April 13, 1920, granting certain rights and privileges in Medina."

Assistant General Manager Ewing followed up this letter with a personal visit to Medina calling upon Mayor Hartzog and several of the members of council. He made no further comment on his company's action than to state that they would not stand for the pressure guarantee. He made no request for a new ordinance or for a special meeting of council, but it is said he will present at the June meeting of council an ordinance eliminating the pressure clause.

Beloit Utility Increases Capital to $1,500,000

An increase from one million to a million and a half in capitalization has been recorded for the Beloit public utility corporation, the Beloit Water, Gas & Electric Company, Beloit, Wis. The amendment to the articles of incorporation was filed with the Secretary of State by B. F. Lyons, president, and Charles H. Deppe, secretary.

Southern Counties Gas Co. Asks Increase in Rates

Declaring that its present rates for natural gas are not compensatory, the Southern Counties Gas Company of California has applied to the State Railroad Commission for authority to increase its charges for natural gas supplied to its consumers in the county of Ventura, in the cities of Ventura, Oxnard and Santa Paula, and in other unincorporated towns and communities in the county.

In the application to the railroad commission filed by the gas company the company shows that for the year ending March 31, 1920, its total operating revenue in the county of Ventura amounted to $56,385.06, while its total operating expenses (exclusive of depreciation) totaled $69,217.76. Additional costs, including depreciation and a return on its investment, would bring the total cost of operation to approximately $108,000, the corresponding deficit being, therefore, about $51,600. This shows that the company seeks an advance in rates of almost 100 per cent.

The gas company claims that since it has taken over the gas properties in Ventura County it has inaugurated the service of natural gas, a fuel product of greater heating value and less expensive to the consumer. The former artificial gas contained approximately 550 B.t.u., while the present natural gas distributed here has a heating value of from 1,200 to 1,300 B.t.u. Since heat units are what the consumer pays for when he buys gas, it may readily be seen that gas bills throughout the county have been materially reduced by the introduction of natural gas.

The company's claim to the commission is that up to March 31, 1920, it has expended for additions and betterments to its gas system in the county the sum of $188,592. Many of the pipe lines and mains were in poor condition and improvements to render the consumer better service had to be made.

It is shown in the application that as a result of the introduction of natural gas of a higher heat value the company has suffered a material reduction in its revenue throughout the county, notwithstanding betterments of service conditions and the efforts made to build up its business in every way. It declares that since the establishment of the existing rates here the costs of labor and materials used in connection with the operation of its business have increased tremendously, the existing rates being no longer sufficient even to pay operating expenses, to say nothing of a rate of return upon the investment.

City to Manage Gas Plant Temporarily

The City Water & Light Commission, Ft. Atkinson, Wis., have, at the request of the gas company, taken charge of the gas plant and will operate it for the gas company and at the expense of the company, until such time as the city takes over the entire business, or other arrangements are made. It being understood that the city is operating the plant only and in no way assuming any other part of the gas company's business. This action was taken, due to the fact that the gas company was unable to hire men to run the plant.

Adams Gaslight Would Issue More Stock

The Adams Gaslight Company of Adams, Mass., has petitioned the department of Public Utilities for authority to issue $133,000 in new capital stock, the par value of which would be $100 a share. The capitalization now is $60,000. George F. Howland of Auburndale, treasurer of the company, said the proceeds of the proposed issue would be used in paying off notes to the amount of $102,000 and to meet expenses incident to the construction of a new transformer station. He estimated the company would pay 8 per cent dividends on the additional issue. The rate on the present capitalization has ranged from 15 to 22 per cent.

Gas Merger Pending

A merger of gas supply systems in the West Side is impending. The West Side Gas Company, engaged in selling gas in Taft and Maricopa, Cal., and Joseph McDonald, operator of a gas supply system in South Taft and Fellows, have filed application with the State Railroad Commission for permission to sell all individual and company interests to the West Side Natural Gas Company.

An agreement of sale has been negotiated between the two concerns, and will be executed upon granting of the permit from the railroad commission, if it is granted. The agreement provides that the West Side Gas Company is to transfer the property to the West Side Natural Gas Company in exchange for 997 shares of stock, and that Joseph McDonald is to transfer his holdings for 500 shares of capital stock in the natural gas concern. McDonald is sole stockholder in the present West Side Gas Company.

Gas Company Sues City of Pawhuska

An alleged dispute of long standing between the city government of Pawhuska, Okla., and the Pawhuska Oil & Gas Company has culminated in the filing of a suit in the district court against the city by the company for $36,000. Of this $14,000 is claimed to be due for gas furnished prior to July 1, 1919, and the balance for gas furnished since July 1.

On that date the corporation commission issued an order forbidding the local gas company from furnishing free gas to the city or to any other patron, it is claimed by the company. The company is said to have furnished the gas and presented its bill, which the city commission refused to pay. Following the intervention by the corporation commission the company has continued to supply gas to the city pending the settlement of this account.

Pacific Gas to Improve Plant

An order has been issued by the Railroad Commission granting to the Pacific Gas & Electric Company, San Francisco, Cal., authority to issue $10,000,000 of temporary certificates, the certificates to be secured by deposit of $15,000,000 of the company's bonds.

At the hearing of the application before the commission John A. Britton, vice-president and general manager of the Pacific Gas & Electric Company, testified that in his opinion the company in 1920 should expend at least $10,685,746 for necessary additions and betterments and that if funds are available should expend an additional $2,376,680, making a total of $13,062,426.

New Gas Plant Being Finished

One of the important improvements of the city of Chico, Cal., is the enlarging and remodeling of the Pacific Gas & Electric Company's gas plant just being completed at a cost of approximately $40,000.

An entirely new building replaces the former structure, and the capacity of the plant has been increased.

Report of the Federal Trade Commission on Oil Situation

The Federal Trade Commission has delivered to Congress its report in response to House Resolution No. 501, April 5, 1920 (Congressman Dyer of Missouri), which directed the Commission to investigate the causes of the advance in prices of gasoline, fuel oil, kerosene, and other refined oil products; and to report also as to any combination or restraint of trade existing in the industry, as to profits, and as to the sources of crude oil supply of the United States.

The conclusions of the Commission may be briefly summed up as follows:

It seems that there is greater justification in assigning the advance in price of crude oil and petroleum products to varying conditions of supply and demand in the light of emphasized and pessimistic statements as to future of supply, than to a combination in restraint of trade. The Commission has previously reported upon competitive conditions in the oil industry. Nothing has been developed in the course of this inquiry which shows a change in the conditions so reported.

The explanation of the men in the oil industry regarding the reasons for the advances in the prices of crude oil—namely, the strong demand for crude oil, the decline in stocks, the increasing consumption during the last half of 1919, and the decreasing production during the last quarter of 1919, the increased costs of drilling and producing crude oil and the unfavorable developments in the Mexican oil field—has substantial force, especially in 1919, but it should be noted that the conditions in 1920, appear to have greatly improved with respect to production and imports. It is also the opinion of the Commission that the psychological factors in the situation were more important than the actual statistical position, the mental attitude of the oil trade being strongly affected on the one hand by the frequent statement that there was an impending decline of production in the United States, which was aggravated by the sudden slump of North Texas output in the middle of 1919, and by the unfavorable development industrially and politically in Mexico in the autumn of that year.

Taking the refining branch by itself, it is not possible to say at present whether the advance in the prices of petroleum products (gasoline, kerosene, gas oil and fuel oil and lubricants) were disproportionate to the advances in crude prices, because this question can only be determined from the aggregate profits of operation of refineries and the available data so far obtained are inadequate to answer the question. For the same reason it is impossible to show what the profits of the integrated companies (which have a large crude production of their own) have been in 1920, though in 1919, the profits of many of the large oil companies whether producers, refiners or distributors of oil, were large.

The following are the recommendations made by the Commission:

1. While the production of crude oil in this country is still on the increase and the present sources of supply appear to be adequate for some time to come the probable gradual decline of crude oil production in this country in the not remote future, according to the general prediction of geologists and the men engaged in the industry makes it seem the part of prudence to encourage those engaged in the oil industry in this country to develop production in such foreign countries, which have oil resources, as are most available for furnishing supplies of oil and that such enterprises should be given all proper diplomatic support in obtaining and operating oil producing property.

2. In view of the excess of present consumption over production from domestic sources and the increase of exports despite this deficiency, it seems that the natural resources of the United States are being depleted more rapidly than would be the case were the products of these resources applied first to domestic needs and that the diminution of stocks on hand due to export, contributes to an increase in cost to the domestic consumer. We suggest that Congress consider whether the situation does not indicate the advisability of its consideration of restriction upon the exportation of domestic crude oil and its products.

3. Wasteful methods in drilling for oil should be a subject of special study in its technological, economic and legal aspects with a view to discovering what remedies may be possible through State legislation or otherwise.

4. The study of more economical methods of utilization, the scientific determination of the possibilities of oil shale, and the availability of substitutes should be provided for in the appropriation to the government establishments specially conversant with these matters.

5. The great importance of information regarding changes in industrial and commercial conditions in the oil trade, suggests the need of making provision for having such information currently collected and reported for the use of Congress, the public and the industry; such work should be entrusted to a body equipped to deal with industrial and economic questions and possessing adequate powers with respect to obtaining and verifying reports made by the various branches of the industry.

(Signed) HUSTON THOMPSON,
Acting Chairman.
WILLIAM B. COLVER,
NELSON B. GASKILL,
JNO. GARLAND POLLARD,
Commissioners.

$1,000,000 Stock Issue

Authorization of the issue of $1,000,000 in bonds by the Los Angeles Gas and Electric Corporation, Los Angeles, Cal., for the purpose of making additions to the equipment of the corporation and erecting new steel structures has been given by the state railroad commission. The bonds are to be sold at not less than 95 per cent of par.

Permission to sell the bonds was made on the basis that the service given by the corporation is satisfactory, according to the investigation of the commission, and because business has increased there is need for expansion. Expansion work is to be rushed, according to Attorney Paul Overton, general counsel for the corporation, the bonds being issued soon.

Extra Dividend Declared by G. & E.

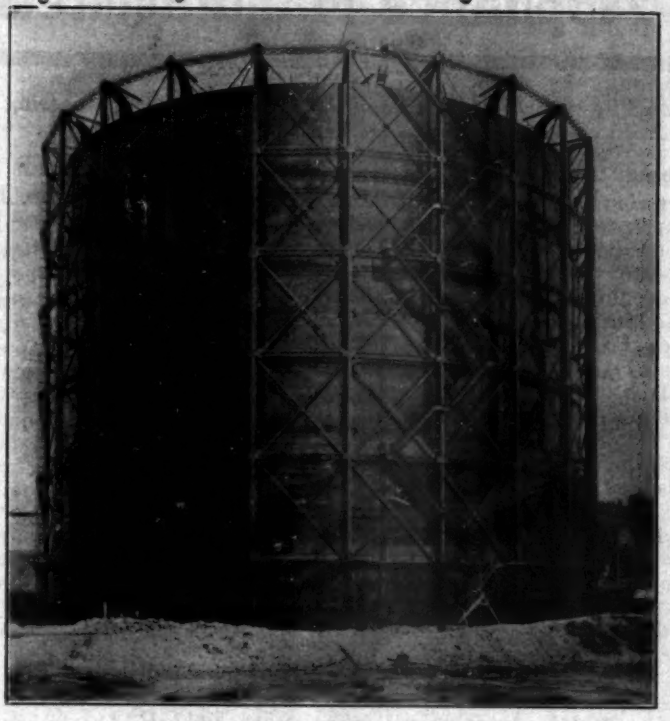
An extra dividend of 3 per cent ($1.50) has been declared on stock of Charlestown Gas & Electric Company, Charlestown, Mass., payable June 1 to stock of record May 12. This brings total declared for year to 15 per cent.

Fire Destroys Station

Fire destroyed the sub-station of the Pacific Gas & Electric Company at Hammonton, Cal., with an estimated loss of about $25,000.

RITER-CONLEY CO.

PITTSBURGH, PA.



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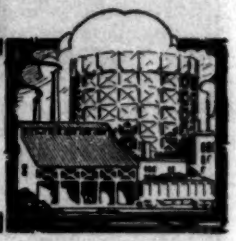

Conducted by Business Department of American Gas Engineering Journal

New Room Heater

The Grayson Manufacturing Company, Athens, Ohio., is placing on the market a radiating mantle type heater called the "Ray-Glo." The company is composed of men of wide experience in the manufacture of gas appliances in England, especially in the gas cooking and heating field. In 1907 J. H. Grayson came to the United States and in 1914 with his brother, G. L. Grayson, formed the Grayson Tool & Manufacturing Company at Indianapolis, Ind., and a year later was joined by William Carr, a brother-in-law who also had been employed with them in England. During the war each of the men engaged in war work. After the armistice, they formed the Grayson Manufacturing Company, locating at Athens, Ohio.

The company is specializing on the Ray-Glo, a heater using separate composition mantles and composition back wall, which reached a high stage of development in England about the time war was declared.

Charles Harbison, one of the best known gas appliance salesmen in the country, has been made sales manager for the Grayson Company.

A New Gas Purifier

The Henderson Lumber Company, 1712 Commonwealth Bldg., Pittsburgh, Pa., is marketing a new gas purifier called "Rock Sponge." It is made from a hydrated iron oxide base, and is furnished in granular and lump form ranging from pea to egg size.

It is stated that each granule is porous, and will absorb hydrogen disulphide throughout its mass, and eliminates back pressure, blow holes, caking and packing.

It is made to extract nearly its own weight in hydrogen disulphide and it can be removed from the filter boxes when spent as easily on equal amount of gravel.

New Thomas Meter Booklet

The Cutler-Hammer Manufacturing Co., Milwaukee, Wis., manufacturing Thomas meter, recently issued a two-color booklet entitled "The Value of the Accurate Measurement of Gases and Air in Gas Plants, Coke Oven Plants, Steel Plants and Chemical Plants."

Attention is called to the fact that no corrections are required on the chart for variations in pressure, temperature, barometer, gravity or composition of gas. It states that the Thomas meter not only measures the gases and automatically corrects itself, but it provides a permanent graphic record giving a picture of the gas flow in cubic feet. Several pages of the booklet are devoted to city gas plants. The makers state that nearly 15,000,000 cu. ft. of gas produced in city gas plant are being measured by Thomas meters at the city gas plant stations. Illustrations show the meters installed in gas plants in Brooklyn, N. Y., Malden, Mass., Racine, Wis., Indianapolis, Ind., and Toledo, Ohio. Sections of charts taken from the graphic instruments in some of these plants are also shown. A sketch of a piping arrangement that permits operating either one or two Thomas meters while the other is by-passed for inspection, or connecting them in series for a check on each other's accuracy, or operating them in parallel when a heavy demand makes necessary increased capacity, is shown. There are also photographs illustrating Thomas meter housing in fuel gas lines to coke ovens, at Milwaukee, Wis., and Mayville, Wis.

This booklet will be sent to gas or coke manufacturers on request.

Change in Company Name

The Perfect Combustion Company, 1008 Peoples Gas Building, Chicago, Ill., announces that it has changed its name to the Nu Styl Gas Iron Company.

Portable Air Compressors for Main Laying and Repair Department

The Ingersoll-Rand Company, 11 Broadway, New York, has just issued a catalogue entitled "Compressed Air for the Road Builder." One chapter is devoted to "Trench Excavation and Pipe Laying," and describes the utility value of the hand hammer drill in the excavation of rock in digging trenches. For handling pipe it states that "the portable air compressor on the job supplies power to a 'Little Tugger' hoist which will skid and haul the lengths into place and lower them into the trench. After the joints are calked you can use the same 'Little Tugger' to haul a scraper in backfilling. It has a drum release clutch which just suits a job such as this, where the cable should pay out free.

"Pneumatic tools save much of the labor of making pipe joints. If it is rivet-jointed pipe, you cannot do without an air drill to ream the holes into line and an air hammer to drive the rivets. If it is bell-jointed pipe you can well use a pneumatic hammer for calking.

"In tamping backfill, the pneumatic rammer enables a workman to do ten times the work he can do by hand. An air tamper will strike 600 hard, snappy blows a minute, ram the fill in hard, and work in and around pipe with far greater thoroughness than hand methods. Air tamped fill will not settle and cause trouble later."

Kennedy Valves

The Kennedy Valve Manufacturing Company, Elmira, N. Y., has just issued Catalogue No. 42, covering its entire line of valves for all uses. The catalogue is freely illustrated and contains many tables and matter describing the construction and uses of the various kinds of valves.